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ALPHABET OF ANGLING.

BY

JAMES RENNIE, M. A.



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ALPHABET
OF
SCIENTIFIC ANGLING.

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ALPHABET
OF
SCIENTIFIC ANGLING,
FOR
THE USE OF BEGINNERS.

BY JAMES RENNIE, M.A.,

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CHRISTOPHER NORTH IN HIS SPORTING JACKET.

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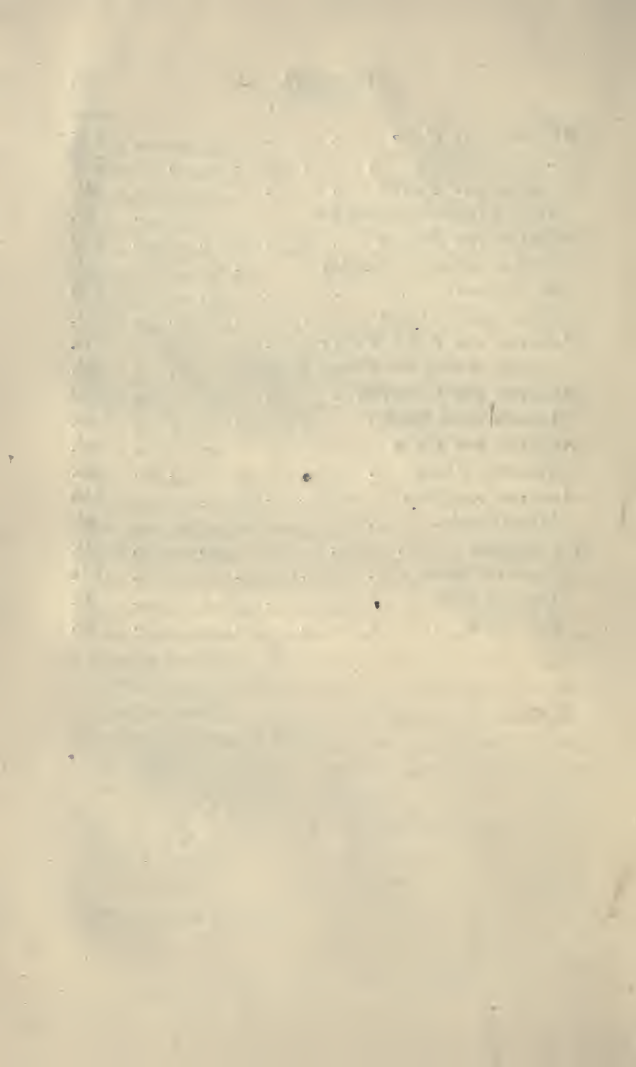
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PLAN OF THE WORK.

“ FIELD SPORTS—Angling seems the earliest of them all, in the order of nature. There, the new breeched urchin stands on the low bridge of the little bit burnie, and with crooked pin, baited with one unwrithing ring of a dead worm, and attached to a yarn thread,—for he has not yet got into hair, and is years off gut,—his rod of the mere willow or hazel wand,—there will he stand during all his play hours, (as forgetful of his primer as if the weary art of printing had never been invented,) day after day, week after week, month after month,—in mute, deep, earnest, passionate, heart-mind-and-soul-engrossing hope of some time or other catching a minnow or beardie !”

And this is angling: a sport that requires as much enthusiasm as poetry, as much patience as mathematics, and as much caution as housebreaking.

I could not be more than six or seven years old when I sallied out one day to the river Ayr, with a bent pin for a hook, as Christopher North has described so graphically and well; but instead of a minnow or

(1) Christopher in his Sporting Jacket, Fytte the Fyrst.—*Blackwood's Magazine*, Sept. 1828, p. 274.

a beardie, (the loach or stone-roach of the south,) I hooked a large trout ; owing no doubt to the muddiness of the water, for as yet I could know little of the guiles of the art, in not scaring the fish. My "yarn thread" was strong enough to twitch out the trout to the green bank where I stood ; but the bank itself unfortunately sloped down to the water's edge, and my bent pin having no barb to take a firm hold, the trout slipped off, spanged down the bank, and in an instant, to my unutterable grief, was lost in the dark water.

Disappointment is the mother of wisdom : I never angled with a bent pin again ; but many a good hook I lost among the roots and stones at the identical spot where I had, as I may say, *pinned* my first trout, and where I supposed, in the simplicity of my inexperience, that all the trouts in the river must undoubtedly lie, ready to be hooked, though I never again succeeded in discovering one of them there.

So far as an on-looker and a child could learn, however, I had good opportunities of seeing the practice both of fly and minnow-fishing, and that these engrossed more of my attention than I can now recollect, would appear from the circumstance, that when I was about four or five years old, I hovered in the rear of the fly-fishers till I got hooked myself, and the fly-hook barb holding faster than my bent pin, it was with no little difficulty and some pain that it was disengaged from my ear. As I grew older, my passion for trout-fishing absorbed many of my thoughts and much of my time, but far from unprofitably, independent altogether of the trouts caught ; for I have no doubt that this has had great influence on my pursuits and studies up to the present

time ; because, while angling, I learned my first field lessons in natural history, and found out by degrees the most important fact to a young inquirer, that all is not to be trusted which is met with in books. For example, in this very art of angling, all the books from old Barker's "Delight," to Daniell's "Field Sports," direct the fly fisher to "let the flies go *down* the stream and never to draw them against it, because it is unnatural," though no angler who ever threw a fly could possibly comply with this absurdity. They might as well direct a minnow to be spun down the stream in trolling. And as for the delights of angling:—

There is a pleasure in the *rolling floods*,
 There is a rapture on the lonely shore,
 There is society where none intrudes,
 By the deep sea, and music in its roar.

Let those that think I must be angling-mad to apply these exquisite lines to our art, listen to old Gervase Markham, who, (I must coin a word on such an occasion), introduces it in his "COUNTRY CONTENTMENTS," by saying,—“Since pleasure is a rapture or power in this last age, stolne into the hearts of men, and there lodged up with such a carefull guard and attendance, that nothing is more supreme, or ruleth with greater strength in their affections, and since all are now become sonnes of pleasure, and every good is measured by the delight it produceth; what worke unto men can be more thankfull than the discourse of that pleasure which is most comely, most honest, and giveth most liberty to Divine meditation? and that without all question is the art of angling.”

Dame Juliana Barnes, the prioress of Sopwell, also, in the Book of St. Alban's, printed in 1486, well says,

“ The angler at leest hath his holsom walke mery at his ease, and a swete ayre of the swete savoure of the meade floures, that makyth him hungry. He heareth the melodyous armony of fowles ; he seeth the yonge swannes, heerons, duckes, cootes, and many other fowles, wyth theyr broodes, whyche to me seemeth better than all the noyse of houndys, the blastes of hornys, and the scrye of fowles, that hunters, fawknars, and fowlers can make. And if the angler take fysshe, surely thenne is there no man merrier than he is in his spirytes.”

I need not add a syllable more to set forth the delights of angling ; but I beg leave to add a word or two respecting the qualities required in an angler, and I cannot do this to better purpose than by quoting the same Gervase Markham, whom the reader has just observed to discourse so well, though quaintly withal, on the rapture of the art.

“ A skilfull angler,” quoth old Gervase, “ ought to be a generall scholler, and seene in all the liberall sciences, as a grammarian, to know how either to write or discourse of his art in true and fitting termes, either without affectation or rudenes. He should have sweetness of speech to perswade and intice others to delight in an exercise so much laudable. Hee should have strength of arguments to defend and maintaine his profession against envy or slaunder. Hee should have knowledge in the sunne, moone, and starres, that by their aspects hee may guesse the seasonablenesse or unseasonablenesse of the weather, the breeding of the stormes, and from what coasts the windes are ever delivered.

“ Hee should be a goode knower of countries, and well used to high wayes, that by taking the readiest pathes to every lake, brook, or river, his journies may be more certaine and lesse wearisome. Hee should have knowledge of proportions of all sorts, whether circular, square, or diametricale, that when hee shall be questioned of his diurnall progresses, hee may give a geographical description of the angles and channels of rivers, how they fall from their heads, and what compasses they fetch in their several windings. Hee must also have the perfect art of numbering, that in the sounding of lakes or rivers, hee may know how many foot or inches each severally containeth, and by adding, subtracting, or multiplying the same, hee may yeeld the reason of every river’s swift or slow current. Hee should not be unskillfull in musick, that whensoever either melancholy, heavinesse of his thought, or the perturbations of his owne fancies, stirreth up sadnesse in him, hee may remove the same with some godly hymne or antheme, of which David gives him ample examples.

“ Hee must then be full of humble thoughts, not disdainig, when occasion commands, to kneele, lye down, or wet his feet or fingers, as oft as there is any advantage given thereby unto the gaining the end of his labour. Then hee must be strong and valiant, neither to be amazed with stormes nor affrighted with thunder, but to hold them according to their naturall causes and the pleasure of the Highest: neither must he, like the foxe, which preyeth upon lambs, imploy all his labour against the smallest frie, but, like the lyon, that seazeth elephants, thinke the greatest

fish which swimmeth a reward little enough for the paines which he endureth. Then must he be prudent, that apprehending the reasons why the fish will not bite, and all other casuall impediments which hinder his sport, and knowing the remedies for the same, hee may direct his labours to be without troublesomenesse.

‘Then,” concludeth Gervase, “if he is not temperate, but has a gnawing stomach that will not endure much fasting, but must observe hours, it troubleth the mind and body, and loseth that delight which maketh the pastime only pleasing.”

I have now left but little room to tell the reader, that I have made this little book as much a brief natural history of fish as a treatise on angling; and that I have, as far as practicable, founded what I have said and borrowed from others, respecting the art, upon the basis of science, a circumstance in which all the books on angling that I have met with are lamentably deficient. Although I was wont to reckon myself a tolerable proficient in the art both of fly and ground-fishing, I have, along with my own small experience, borrowed freely from the experience of others, every thing that I thought likely to be useful to a beginner.

As I wish to add to this, should it be approved of and reprinted, a list of the best *Angling Stations* in the rivers, canals, ponds, lakes, estuaries, and coasts of the British Empire, I shall feel obliged if accounts of any of these, with the particular fish caught, be sent me, free of expense, to the publisher’s.

Lee, Kent, 1st May, 1833.

ALPHABET OF SCIENTIFIC ANGLING.

THE WORD ANGLING.

“ANGLING” differs from Fishing as that which is particular differs from what is general; for as fishing means the catching of fish, whatever may be the method adopted, “Angling” restricts this to the method of hooking only, and, of course, excludes fishing with spears, nets, or nooses, and every other method in which hooks are not used.

The word “Angle,” indeed, which originally meant anything bent, so as to form a corner like the human elbow, came in process of time, to signify a hook, and from that, to give origin to the term “Angling,” which literally, therefore, must signify *hooking*, or the art of

(1) In Greek *ἀγκυον*, “the elbow;” in Latin *Angulus*.

fishing with hooks. "The fishers," says the prophet Isaiah, "shall mourn, and they that cast *angle* upon the brooks shall lament," or, as Bishop Lowth translates it, "those that cast the *hook* into the river;" Fuller in his "Holy State" speaks of "fishing with an *angle*;" and Dame Juliana Berners, prioress of Sopwell, entitles a curious portion of her work, printed in 1496, by Wynkyn de Worde, "The Treatyse of Fysshynge wyth an Angle." About a hundred years afterwards, another work was published, entitled "A Booke of fishing with a hooke and line," which is precisely what has since been commonly denominated "Angling."

The two principal branches of this art are Fly-fishing and Trolling, upon which numerous works have been written: but very few of these are original, or dictated by experience, by far the greater number being mere compilations. The most celebrated of all these works, is entitled the "Complete Angler, or Contemplative Man's Recreation," by Izaak Walton; but though this is really a very good practical work, containing the result of both the author's experience and that of his friends, its popularity has not arisen from this, but, as has been justly said, "from the beautiful accessories of pure style, poetical sentiment, and picturesque illustration, such as must ever delight the general reader," though he be no angler, while the latter will not always readily meet with the information he may want for immediate practice. It is a book indeed, which all men, and, I may add, all women too, must be delighted to read, altogether independent of

the subject, in the same way as all must be delighted with the excellent imitation of it by Sir H. Davy in his *Salmonia*; and still more with the spirited and highly poetical articles on fishing in *Blackwood's Magazine*, the striking originality, and peculiar raciness of which evidently bring them home to Professor Wilson, well known to be one of the best and most enthusiastic anglers in the North.

ARRANGEMENT OF THE SUBJECT.

As the chief knowledge required by a skilful angler, is the thorough acquaintance with the food and habits of the fish he wishes to catch, I think I cannot better commence my instructions to beginners, than by an account of these circumstances, upon which they must found all the skill they may subsequently acquire. I might indeed have begun with a description of rods, lines, hooks, and baits—the instruments of the angler's art, but as these have all been gradually invented, and brought to perfection, wholly by observing the food and habits of fishes, it is undoubtedly the best and most scientific way to begin with this fundamental knowledge.

When these preliminary steps have been got over,—and I request the beginner's attention to them, before proceeding farther,—I have, in what follows, been in some measure guided by the consideration, that local circumstances must frequently limit the sport of the most ardent angler, to the waters within his reach.

Some may have opportunities of fishing in a fine river, stored with salmon or trout ; others may have only the convenience of a canal or a pond ; while a third party may be confined to the sea-side, at a distance from any good fresh water fishing. I have accordingly treated of angling in these various sorts of waters, under separate heads, giving the lead to river angling as by far the most interesting, though I have myself found as good sport at sea, particularly in angling for mackarel in a fine breeze, as ever I did even in fly-fishing for salmon, or trolling for trout ; yet sea angling is unaccountably omitted in most books on the subject, probably because the authors had no experience therein.

I have deemed it more useful to introduce an account of the various tackle, when giving directions for its use, than to make a separate division for this purpose.

FOOD OF FISHES.

WERE we to make a general inference from a few facts, we might conclude that several fish contrive to live without taking any other food than the water in which they swim. The herring, for example, is never, when caught, found to have anything in its stomach, and, what is no less singular, the salmon has not been observed to have anything in its stomach besides a sort of yellow fluid; while the trout, which so much resembles it, in many particulars, has usually its paunch fully crammed. In the instance of the gold fish, Dr. Fordyce kept some in water, supposed to be pure, and by merely supplying them with fresh air, they not only lived for many months, but increased considerably in size; proving that they may be maintained in a perfect and healthy state for a considerable time, with nothing besides fresh water exposed to the air.

“Some,” says White of Selborne, “that delight in gold and silver fishes, have adopted a notion that they need no aliment. True it is, that they will subsist for a long time without any apparent food, but what they can collect from pure water frequently changed; yet they must draw some support from animalcula, and other nourishment supplied by the water; because, though they seem to eat nothing, yet the consequences of eating often drop from them. That they are best pleased with such jejune diet may easily be confuted, since, if you toss them crumbs, they will seize them

with great readiness, not to say greediness; however, bread should be given sparingly, lest, turning sour, it corrupt the water. They will also feed on the water plant called duck's meat (*Lemna*), and also on small fry."

As fishes do not breathe, and are not furnished with lungs, all of them probably derive from the air in water a greater proportion of nutriment than is done by warm-blooded animals,—the small red points on the outer edge of the gills having the power to take up oxygen, and probably nitrogen, while they at the same time give off carbonic acid gas¹. Be this as it may, the power of very rapid digestion, which has been brought to explain the absence of food in the stomachs of herring and salmon, is certainly an unfounded supposition, inasmuch as the rapidity of digestion must always depend in a great measure, upon a considerable degree of heat, and the natural heat of fishes is always very low. M. Broussonet found, upon several trials, that this heat was from three fourths to one half a degree of Réaumur higher than the water; and M. Despretz's experiments gave very nearly the same result.

To me it appears much more probable, that, like reptiles, such as the snake and the frog, fishes have intervals more or less extended of fasting, after which they eat with great voracity, and then rest again for similar intervals without eating. It is almost incredible how long a serpent may be kept alive without food;

(1) See "ALPHABET OF SCIENTIFIC CHEMISTRY," page 105, &c.

whereas birds, whose digestion is very rapid on account of their high degree of heat, cannot bear the want of food for many successive hours, much less days.

Spallanzani indeed, in his curious experiments on digestion, found that fishes digested more quickly than serpents, and that the process was wholly effected by the digestive fluid without any pressure or trituration from the stomach as in birds ; for the tin tubes containing food, which he caused eels, carp, pike, and bream to swallow, were not in the least bruised, though they were so thin that the slightest pressure would have crushed them, while he found the food within the tubes digested in the course of from one to three days.

Like other animals, fishes discriminate the food which suits them by means of the senses of taste, smell, and vision, and less commonly, I believe, by hearing, each of which it may be well to notice separately.

SENSES OF FISHES.

THE several senses are bestowed on animals to direct them in the pursuit of what is beneficial, and in avoiding what may be injurious ; but for the present I shall confine myself to such of them as relate to the procuring of food, it being my wish to render this little book as practical as possible, while, at the same time, I am anxious to lay down sound scientific principles upon which the practice of the art is or ought to be founded.

Taste in Fishes.

There can be no question that the sense of taste in fishes, as well as in those birds which live upon similar food, is less acute than in other animals, a circumstance strongly indicated by the hard, gristly texture of the tongue when it exists, as it can scarcely be said to do in all fishes, though it is, as M. De Blainville justly remarks, very distinct in the carp, and rather less so in the salmon.

The numerous experiments which I have made upon birds whose food consists of small fruit and insects, which they swallow without breaking, lead me to conclude, that they choose some and reject others, not by taste but by touch, probably aided by smell, and I have no doubt it is the same with fishes; at least it is obvious from their so generally swallowing their food without chewing or bruising it, even if they possessed acute taste, that it could not aid them in the discrimination.

The peculiarly large tongue in the carp accordingly is traceable to its feeding in part upon water plants, which it must, as in the case of grass, tear in pieces though it has no teeth, and it is probable it has been thus providentially furnished with a more acute organ of taste, to prevent its being poisoned by eating water-hemlock, or other deleterious plants.

That all fish are not thus provided with taste sufficiently acute to enable them to reject what is poisonous, appears from the practice of poachers in poisoning

fish. They pound a quantity of fishers, berries¹ in a mortar, and, with or without flour or oatmeal, cheese, honey, and the like, make a paste which they form into balls about the size of garden peas, and throw them into the water. The fish greedily swallow these, and becoming intoxicated or palsied thereby, they come up to the surface of the water, and are easily caught or soon die.

The teeth of fishes are not then, it would appear, destined for chewing, but principally for laying hold of and detaining their prey, being with this view bent inwards similar to tenter hooks, by which means small fishes though ever so slippery are forced back into the gullet, and their escape or return prevented. It is no doubt with the same design that the throats of many fish are studded with what M. Bory St. Vincent terms a pavement of teeth. Such fishes as have teeth thus placed far back upon the palate and upper part of the throat while they want them in their jaws, are termed by anglers *leather-mouthed*².

Amongst leather-mouthed fishes are reckoned, the minnow, the loach, the gudgeon, the bleak, the roach, the dace, the barbel, the chub, the rud, the bream, the tench, and the carp. The salmon and the pike have teeth both in the jaws, and in all parts of the mouth, and the perch in all parts of the mouth except the tongue. The sturgeon again has no teeth whatever.

The distinction of fish into such as are and such as

(1) In Latin, *Cocculus Indicus*.

(2) Technically, *Malacostomata*.

are not leather-mouthed is of some importance in angling, as a different management is required for each, in making sure of a fish, after it is hooked. "By a leather-mouthed fish," says Walton, "I mean such as have their teeth in their throat; and the hook being struck into the leather or skin of the mouth of such fish, does very seldom or never lose its hold; but, on the contrary, a pike, a perch, a trout, and so some other fish which have not their teeth in their throats, but in their mouths (which you shall observe to be very full of bones, and the skin very thin, and little of it,) I say, of these fish the hook never takes so sure hold but you often lose your fish, unless she have gorged it."

That water-grass and some other plants are partly the natural food of the carp is, I think, unquestionable; but I think it probable when either carp or other fish feed on brewers' grains, boiled barley, split peas, and the like, that they mistake these for the eggs or cocoons of water animals, inasmuch as they could not naturally procure a supply of these except by rare accident. That some fish may feed on the seeds of such plants as are scattered about the water is not however improbable, and it may have been from observing this, that it is recommended by Lebault and Debray, after removing the fish to let fish-ponds dry, to sow them with oats or other grain, and when the corn is ripe to stop up the water and bring back the fish to feed. Bowlker remarks that carp will eat wheaten, barley, or oaten bread, while tench and perch will not touch it: a manifest indication of peculiarity in taste.

Even carp however likes animal food, and will devour small eels, frog-spawn, and the roe or the young of fishes, including its own species, as well as water insects, which are the staple food of every sort of fish from the minnow to the salmon, every thing that lives and moves being swallowed without, so far as we can find, any discrimination of species or much nicety of selection.

Smell in Fishes.

Smelling in land animals is immediately connected with breathing, and we cannot easily conceive how smell is produced except by a current of air, in which odoriferous particles are diffused, passing through a moistened channel, as was first so admirably described by Schneider two hundred years ago ; but in fishes which do not breathe, smell cannot be thus produced, though there can be no doubt of their being endowed with this sense. Water, indeed, is as good a medium for diffusing odours as air, and there is the less necessity for a current of this being produced through the nostrils, as fish move about so constantly through the water. Their nostrils, therefore, are in general large, but imperforate backwards ; that is, they do not communicate with the throat, but in some fishes, such as the rays and the sharks, the nostril opens by a considerable chink into the mouth, and through this a current of water may probably run. M. Dumeril and the Rev. W. B. Daniell think, that, from the structure of the nostril, and the want of an aërial medium for odours, fishes cannot smell at all, and that their

nostrils perform a function similar to taste; but to me this supposition seems gratuitous and improbable, and it tends strongly to disprove the opinion, that experienced anglers find certain strongly smelling substances in the form of pastes, excellent for enticing fish to their baits.

Paste-Baits, and Smelling Ointments.

Walton, for example, recommends for chub in August, "a yellow paste made of the strongest cheese, with a little butter and saffron;" "for the winter months a paste of cheese and turpentine;" and says of tench, "he inclines very much to any paste with which tar is mixed." The scent of ivy is reported to have a peculiar power in attracting fish, and hence the angling books abound with receipts for its various uses. The oldest I have met with is in a rare volume entitled "The Secrets of Angling," by J. D. [Davors,] published in 1613, and runs thus:—

To bless thy bait and make the fish to bite,
Lo! here's a means, if thou canst hit it right,
Take gum of life, well beat and laid to soak
In oil well drawn of that [ivy] that kills the oak.
Fish where thou wilt, thou shalt have sport thy fill;
When others fail, thou shalt be sure to kill.

Walton gives another in Latin, imparted to him by an excellent angler, who told him it was too good to be told but in a learned language, lest it should be made too common, gum ivy being, as he alleged, "supremely sweet to any fish." Walton, however, had not tried this, in which he pretends to have "no great faith," though he mentions a circumstance that strongly disproves his own opinion. "I have been a fishing," he says,

“ with old Oliver Henley, now with God, a noted fisher both for trout and salmon ; and have observed, that he would usually take three or four worms out of his bag, and put them into a little box in his pocket, where he would usually let them continue half an hour or more, before he would bait his hook with them. I have asked him his reason, and he has replied, ‘ he did but pick the best out to be in readiness against he baited his hook the next time ;’ but he has been observed, both by others and myself, to catch more fish than I, or any other body that has ever gone a-fishing with him could do, and especially salmons ; and I have been told lately, by one of his most intimate and secret friends, that the box in which he put those worms, was anointed with a drop, or two or three, of the oil of ivy-berries, made by expression or infusion ; and told me that by the worms remaining in that box an hour, or a like time, they had incorporated a kind of smell that was irresistibly attractive, enough to force any fish within the smell of them, to bite.”

The gum ivy kept in the shops, being, according to Best, counterfeit and good for nothing, he advises the angler to procure it himself by driving several large nails about Michaelmas or in spring into the thickest stems of ivy, working them about till they become loose, and then allowing them to remain till the gum ooze out ; or by slitting up the bark on the larger stems of ivy with the same view, and collecting the gum once a month or oftener.

Walton gives another receipt founded upon the same principle of strong odour, consisting of the stinking

oil drawn out of the polypody of the oak by a retort, mixed with turpentine and hive honey. Mr. Best recommends a paste made with three drachms of assafoetida, one drachm of camphor, and one drachm of Venice turpentine, pounded in a mortar with a few drops of oil of lavender or spike.

On the continent, paste baits are still more complicated, as a specimen of which, I shall give one by M. Charrrs, who was apothecary to Louis XIV., made with two drachms each of cat's fat, heron's grease, the best assafoetida, Egyptian mummy finely powdered, two scruples of aniseed finely powdered, one drachm each of camphor, galbanum, and Venice turpentine, and two grains of civet. These are incorporated to the consistence of a thinnish ointment, by means of the oil of lavender, of aniseed and of camomile, and may be kept good for a year or two in a narrowmouthed pot or glass covered with a piece of bladder and leather. The bait and about eight inches of the line are directed to be anointed with this to attract the fish.

It is probable that these variously scented ingredients attract fish, (though many doubt this) in a singular inexplicable way, as cats are attracted by the smell of valerian, of which there can be no doubt. I should think, however, that "oil of petre or rock oil," that is, petroleum, which Walton recommends to attract pike, cannot succeed, as this is deleterious to all fish; no less than tar, which Daniell suggests as the only one of these ointments which he ever found useful.

The most fascinating of such pastes, however, appears to be the roe or spawn of salmon, variously

prepared, which is more easily accounted for, from its smell, than any of the preceding, since they are quite artificial, while this is a natural and much relished article of food. The original account, if I mistake not, is given by Barker, in his curious "Art of Angling," published in 1651, who, addressing his noble patron, Edward Lord Montague, says, "I have found an experience of late which you may angle with, and take great store of fish. First, it is the best bait for a trout that I have seen in all my time; and will take great store, and not fail if they be there. Secondly, it is a special bait for dace or dare, good for chubb, or bottlin, or grayling. The bait is the roe of a salmon or trout: if it be a large trout that the spawns be any thing great you must angle for the trout with this bait as you angle with the brandling, taking a pair of scissors, and cut so much as a large hazel nut and bait your hook, so fall to your sport; there is no doubt of pleasure: if I had but known it twenty years ago, I would have gained a hundred pounds only with that bait. I am bound in duty to divulge it to your honour, and not to carry it to my grave along with me. I do desire that men of quality should have it, that delight in that pleasure. The greedy angler will murmur at me, but for that I care not. For the angling of the scale-fish, they must angle either with cork or quill, plumming their ground, with feeding with the same bait, taking them asunder, that they may spread abroad, that the fish may feed and come to your place; there is no doubt of pleasure, angling with fine tackles or single hair lines at least five or six lengths long, a small hook,

with two or three spawns. The bait will hold one week, if you keep it on any longer, you must hang it up to dry a little; when you go to your pleasure again, put the bait in a little water, it will come in kind again."

Mr. Chetham directs for the preparation of salmon spawn, to sprinkle it with a little salt, laying it upon wool in a pot, one layer of wool and another of spawn, alternately, till the pot is filled. The direction given by the Rev. W. B. Daniell, is to take a pound of salmon spawn in September or October, boiling it about fifteen minutes, then beating it in a mortar, till sufficiently mixed with an ounce of salt and a quarter of an ounce of saltpetre, the membrane in which the spawn is contained being carefully picked out. It is then preserved closely covered up in jars or wide-mouthed glass vessels, and will keep good for months.

I have no doubt that the roe of herrings, or any other fish, would answer a similar purpose, as the external appearance, as well as the smell, which seems the chief attraction, is not materially different. A paste of the same kind is made with shrimps freed from the shell. Hence, also, the shell-fish, such as muscles, used in sea fishing, and the putrid meat used for eels, obviously attract in consequence of their odour.

Independently of these well ascertained facts respecting the smell of fishes, we learn from anatomy that the nerves of smell are comparatively large, as is shown in the figure below, a circumstance which alone would indicate the power or acuteness of this useful sense.



The brain and nerves proceeding therefrom in the carp. *a, a, b, b*, the lobes of the brain in five ranks; *c, c*, the nerves of the eye; *d, d*, the nerves of smell, branching off into expanded filaments upon the nostrils, *e, e*.

Vision in Fishes.

The form of the eye in fishes proves that they are all very near-sighted, so much so, that the dense medium of water can have but small influence in extending their vision, which must be farther limited from the eye being covered by the common skin of the head, in order to defend the eye-ball, as there are no eye-lids for this purpose as in other animals. This indistinctness of vision may be observed by any one who will take the trouble, in the gold and silver fish usually kept in glasses. "It has been said," remarks White of Selborne, "that the eyes of fishes are immovable; but these apparently turn them forward or backward in their sockets, as their occasions require: they take little notice of a lighted candle, though applied close to their heads, but flounce and seem much frightened by a sudden stroke of the hand against the support whereon the bowl is hung, especially when they have been motionless, and perhaps asleep: as fishes have no eye-lids, it is not easy to discern when

they are sleeping or not, because the eyes are always open." The large size of the eyes, which are almost as large as the head in the gold fish, do not therefore indicate distinctness of vision, but the contrary; and hence M. de Blainville is probably in error, when he attributes greater distinctness of vision to wandering and migratory fishes, such as the cod, whose eyes are as large as those of a man, or even of an ox, than to species more stationary, such as the perch, whose eyes are comparatively small.

It is of considerable importance for the angler to bear this indistinctness of vision in fish always in mind, as much of his success must depend on being guided thereby. The shadow, for example, which will be cast upon the water by having the sun on his back will have the same effect in frightening the fish, as if it were caused by a harmless sheep or a prowling otter, and the poor fishes being unable to discriminate between friends and enemies, dart away in terror at every shadow which crosses them. Sir Humphrey Davy well illustrates this by an anecdote of the late C. J. Fox, who, walking up Bond Street from one of the club-houses with an illustrious personage, laid him a wager, that he would see more cats than the Prince in his walk, and that he might take which side of the street he liked. When they had got to the top, it was found that Mr. Fox had seen thirteen cats, and the Prince not one. The royal personage asked for an explanation of this apparent miracle, and Mr. Fox said, "Your Royal Highness took, of course, the shady side of the way, as most agreeable; I knew

that the sunny side would be left to me, and cats always prefer the sunshine." Sir Humphrey, speaking to his companions in the 'Salmonia,' subjoins, "as you are my scholars, I believe I must teach you. The sun is bright, and you have been, naturally enough, fishing with your backs to the sun, which, not being very high, has thrown the shadows of your rods and yourselves upon the water, and you have alarmed the fish whenever you have thrown a fly. You see I have fished with my face towards the sun, and though inconvenienced by the light, have given no alarm. Follow my example, and you will soon have sport, as there is a breeze playing on the water."

The same indistinctness of vision will prove the decided fallacy of the supposed art of the routine angler, who fancies the fish are so well skilled in the colours and forms of particular flies, as to refuse all other sorts on particular seasons and days, and even at different periods of the same day. Nothing can be more preposterous than such a notion, universal though it be amongst the most experienced anglers; yet at the same time, I am well aware that the facts are certain upon which they found the fancy, but are to be accounted for on a totally different principle, as I shall endeavour to illustrate in a subsequent page. "There is no evidence," says Daniell, "of any fishes seeing at a considerable distance, and the conduct of many of them that are deceived by different baits prepared in imitation of their food, gives room to suspect, that objects are not very distinctly perceived by them even when near."

Light seems peculiarly attractive to fishes, and accordingly, on taking down a lamp in a diving bell, the diver is immediately surrounded with a multitude of fishes, attracted thither by the light. In what is termed in Scotland *Black fishing*, so interestingly described by Sir Walter Scott in his *Guy Mannering*, the fishers by night carry a grate of burning coals, or, what would be still more convenient, good large torches, and wade along the more shallow streams where salmon come up to spawn. When the water is tolerably clear, few fish can escape such a search, and when they are discovered, they appear to be so fascinated by the glare of the light, that they make little effort to escape, and are easily speared. I have more than once been myself engaged in this singular species of fishing in Ayrshire.

It is on the same principle that the Chinese catch fish, by what may be called a sort of *daring*. They employ two strait boats, with a board painted white and varnished, nailed to them. This is made to slope outwards, and almost touches the surface of the water, the colour of which it is made to take by the reflection of the light of the moon. Towards this the fish dart, fall on the board, and are caught without trouble.

Attention to colours in Angling.

From what has been here laid down, it may be seen, that though fishes are not endowed with acute sight to distinguish forms, this will not apply to colours, an attention to which is of some importance for practising the art successfully.

With respect to artificial flies, the most conspicuous colours and such as contrast best with the water, are to be preferred, and for this purpose, light colours in the dusk of morning or evening, and dark colours in clear water and bright weather, are to be preferred. The metallic lustre of peacocks' feathers, and even gold and silver thread, become in this way useful in dressing flies, though there be nothing like them in natural flies; and we shall see in a subsequent page the principle upon which this is founded.

The colour of the line to which the hooks are immediately attached, ought for a similar reason, to be as near as possible to the colour of the water; and though white horse hair or gut is most commonly used, this is frequently stained pale blue, greenish, or brown, to match the colour of the water to be angled in. The following methods are recommended for this purpose, though they are certainly not very scientific.

For a pale watery green.—To a pint of strong ale add half a pound of soot, a small quantity of walnut leaves, and a little powdered alum; boil these materials for half or three quarters of an hour, and when the mixture is cold, steep the gut or hair in it for ten or twelve hours.

For a brown.—Boil some powdered alum till it is dissolved; add a pound of walnut tree bark, from the branches when the sap is in them, or from the buds, or the unripe fruit. Let the liquid stand till nearly cool, and skim it; then put in the gut or hair, and stir it round for about a minute, or till it appears to have imbibed the desired tint. It ought not to be very

strongly tinctured, as it is apt to rot when too dark. For a bluish watery tint, the above ingredients are also used, with the substitution of logwood, instead of walnut.

For a yellow.—The inner bark of a crab-tree boiled in water with some alum, makes a good yellow, excellent for staining tackle used among decayed weeds, the colour of which it closely resembles.

A tawny hue is obtained by steeping hair among lime and water for four or five hours, and then allowing it to soak for a day in a tan-pit. In the absence of other ingredients, both gut and hair may be easily stained by being left for twenty-four hours in strong tea, either with or without a few logwood scrapings.

The hair to be stained ought to be selected from the best white. Silken or hempen lines may be tinted by a decoction of oak bark, which is said to add to the durability of these materials.

It has been even considered of consequence for the angler to attend to the colour and make of his clothes, respecting which, I find the following quaint remarks in old Gervase Markham's *Countrey Contentments*. "Touching the angler's apparell, (for it is a respect as necessary as any other whatsoever) it should by no means be garish, light coloured, or shining, for whatsoever with a glittering hew it reflecteth upon the water, immediately it frighteth the fish, and maketh them flie from his presence, no hunger being able to tempt them to bite when their eye is offended; and of all creatures, there is none more sharp-sighted than fishes are. Let then your apparell be plaine and comely, of a darke colour, as russet, tawney, or such like, close to your body,

without any new fashioned slashes, or hanging sleeves, waving loose like sailes about you, for they are like blinks which will ever chase your game from you."

Hearing in Fishes.

Barker, in his singular book, entitled "Delight," tells us, that Edward Lord Montagu one evening desired him to catch him a dish of trouts against the next morning by six o'clock, and on dropping a hook baited with two lobworms on the water, as is done in fly fishing, the slight plunge attracted the fish to the spot, and as the night was dark he had good sport. This proves beyond doubt, I think, that, in the dark at least, fish are led to their food by hearing; and as they came in this manner to Barker's lobworms, they would no doubt in the same way have run after a minnow, or any other fish or insect whose movements through the water they might have heard.

M. Gouan of Montpelier, tried some experiments upon the hearing of gold fishes kept in glass vases, in which he found, that they took no notice of the loudest sounds, so long as he could prevent the tremor of the air from affecting the water; and without considering that it is this very tremor in the air or water which constitutes sound, he came to the conclusion, that gold fishes, and probably fishes in general, are destitute of hearing. A conclusion, however, which can easily be disproved, independently of the mythological story of Amphion and the dolphins, or of the old Scottish harper, Glenkindie, who, as the ballad has it, "harped a fish out o' the sa't water."

Ælian again tells us, that the chad is allured by the sound of castanets, and in Germany they take this fish by means of nets, to which bows of wood, hung with a number of little bells, are attached in such a manner as to chime in harmony when the nets are moved. The chad, when once attracted by the sound, will not attempt to escape while the bells continue to ring. They are likewise in the habit on the continent, of calling the gold fishes, as well as those kept in ponds, to be fed at the sound of a bell.

“ At Rotterdam,” says Mr. Bradley, “ in a garden belonging to M. Eden, a very curious gentleman, I had the pleasure of seeing some carps fed, which he kept in a moat of considerable extent ; the occasion of my seeing these creatures, was chiefly to satisfy me that they were capable of hearing. The gentleman having filled his pocket with spinach seed, conducted me to the side of the moat, where we stood mute for some time, the better to convince me that the fish would not come to us till he called them. At length, being desirous to see the event, he called in his usual way, and immediately the fish gathered together from all parts of the moat in such numbers, that there was hardly room for them to lie by one another, and then he flung some spinach seed among them, which they devoured very greedily. This alone would have satisfied me that fish had the sense of hearing ; but upon relating the story to some curious gentlemen, I was told, that at Sir William Bowyer’s near Uxbridge, there is a pond of pikes or jacks, which they call together at pleasure, and, I think, this is more surprising

than what I have mentioned of the carps; for the pike is held to be a more wild, untameable fish than the carp, and as it is a fish of prey, it has been thought impossible to civilise it, or make it any way familiar to mankind."

In the case of fish-ponds, M. Lebault accordingly advises not to suffer much shooting at wild fowl, inasmuch as he is of opinion, that it frightens, injures, and destroys the fish. This opinion, however theoretical it may appear to some, seems to be proved by the observations of our celebrated physiologist, Mr. John Hunter, who describes the ear of fishes, always he says important, if not new with him, as consisting of a gristly substance, very hard or firm in parts, and in some species crusted over with a thin plate of bone, so as not to allow it to collapse. The ear of fishes, he also remarked to possess the singular peculiarity of increasing with the size of the individual, whereas in quadrupeds, the ear is nearly as large in the young as in the full grown animal. Mr. Hunter was not contented with ascertaining the structure of the ear in fishes, but experimented upon the power of the faculty itself.

"When in Portugal," says he, "in 1762, I observed in a nobleman's garden near Lisbon, a small fish-pond full of different sorts of fish. Its bottom was level with the ground, and was made by forming a bank all round, with a shrubbery close to it; whilst lying on the bank seeing the fish, I desired a gentleman, who was my companion, to go behind the shrubs, (that there might be no reflection of light from the flash,)

and fire his gun. The moment the report was made, the fish seemed universally affected, for they vanished immediately, raising, as it were, a cloud of mud from the bottom. In about five minutes afterwards, they began to appear, and again swam about as before."

It would lead me into details inconsistent with the conciseness aimed at in this little work, to mention all the erudite discussions to which this subject has given rise, by Dr. Monro, Geoffroi, Comparetti, Scarpa, Weber, De Blainville and others ; and I shall merely hint, that Weber discovered a communication between the ear in fishes and the swim-bladder, the air contained in which is therefore probably affected by sound ; and that De Blainville expresses his astonishment at the magnitude of their nerves of hearing.

NATURAL FOOD OF FISHES.

I HAVE already remarked, that the staple food of every sort of fish is living animals of all kinds, together with the eggs or spawn which may be deposited in the water, and which seem to be one of the favourite dainties of fish, a circumstance no doubt, wisely ordered to restrain the excessive multiplication that might, without this check, most readily ensue, while at the same time, the extraordinary fecundity of fishes, may be considered a wise provision, to produce an adequate supply of food, as land insects are so prodigiously multiplied probably for supplying food to birds. As this is undoubtedly the principal supply of food to fishes of

all sorts, it may be interesting to mention a few of the circumstances respecting it, as ascertained by observation.

Great Fecundity of Fishes.

Like birds, reptiles, and insects, fish are produced from eggs, the mass of which found in the mother-fish, is well known under the name of *roe*, and after exclusion, by the name of *spawn*. The number of eggs in the roe of some fishes is so prodigious as to appear almost incredible. In the carp, Professor Blumenbach says there are more than 200,000; but M. Petit in a carp eighteen inches long, found no fewer than 342,144, and in a sturgeon weighing a hundred and sixty pounds, there was the astonishing number of 1,467,500; yet even this is nothing to the fecundity of the cod, in which upwards of nine millions of eggs have been reckoned by the celebrated Dutch naturalist, Leeuwenhoeck.

The method taken by Mr. Harmer for counting the eggs, was to weigh with accuracy the whole mass of roe, then taking a piece of the weight of twenty, thirty, or forty grains, as was most convenient, weighing it accurately, and giving the turn of the scale to the eggs, to tell them very carefully over, and then by dividing the number of eggs by the grains, to find how many eggs there were in each grain, or nearly so. He only reckoned those eggs that could be distinguished by the naked eye; although by such limitation, numbers were passed over, that by the help of an eye-glass, might have been justly counted. They were told on a

fine earthen vessel, extremely black, by which means they are better discovered.

It appears from Harmer's observation, that the size of the eggs is almost equal in great and small fishes of the same species, at the same time of the year, and that the quantity of spawn, is in general, nearly proportionate to the size of the animal, whence a tolerable guess may be given, of the greatest fecundity of each kind. If it is known to what weight they have been found to grow in a breeding state, their produce at a medium may likewise be settled, upon learning what the mean size of each sort is, when under such conditions. This is not, however, universal, and consequently, not perfectly exact, some fish being much more prolific than others, although of a similar bulk and species.

He further observes, that the great fruitfulness of fishes is not, upon examinations of this nature, the only thing that affects the imagination: the extreme disproportion of their first appearance in the water after being hatched, and that of their full growth, as well as the difference between the magnitude of fish of various kinds, and that of their eggs, are striking curiosities. The egg of a smelt¹ for example, which weighs at its full growth but three or four ounces, appeared larger than that of a cod of twenty pounds' weight, and which might have grown to forty; whilst that of a stickleback², the smallest of all known fish, was found to be above six times bigger than the largest egg he had ever noticed in a smelt.

(1) In Latin, *Osmerus eperlanus*.

(2) In Latin, *Gasterosteus pungitius*.

From the investigations which Mr. Harmer made upon these principles, he drew up a curious table, of which I shall here give the portion that refers to fresh water fishes only.

Names of the Fish.	Nos.	Weight of the fish.		Weight of the whole spawn.	Number of eggs.	Portion of spawn weigh'd	No. of eggs to a grain.	Time of examining.
		Oz.	Dr.	Grains.		Grains.		
CARP.	1	16	12	1265	101,200	46	80	May 25.
	2	25	8	2571	203,109	55	79	April 4.
PERCH.	1	8	9	765½	28,323	85	37	April 5.
	2	5	10	502	20,582	85	41	— 6.
PICKEREL.	1	56	4	5100½	49,304	70	9½	April 25.
	2	—	—	3248	80,388	76½	24½	November 25.
	3	48	10½	3184	33,432	43	10½	March 19.
ROACH (or what was taken to be of that species,	1	2	0	114	9,604	—	—	April 4.
	2	6	8	671	43,615	68	65	May 4, 1764.
	3	3	8	346½	29,799	42½	86	ditto
	4	2	2	153	9,486	42½	62	5
	5	10	6½	361	81,586	39	226	2, 1765.
	6	9	10¾	417	113,841	42	273	6
	7	3	8	213¾	45,475	20	213	24
SMELT.	1	2	0	149½	38,278	30	256	February, 21.
	2	(286½ gr.)	—	50	14,411	—	288	Mar. 21, 1764.
	3	1	14	157½	29,925	40½	190	27, 1765.
	4	1	12	145½	30,991	20	213	28
	5	1	7	149	24,287	20	163	ditto.
	6	1	5	136	23,800	20	173	ditto.
TENCH.	1	40	0	—	383,252	—	—	May 28, 1764.
	2	28	8	533½	280,087	25	252	3, 1765.
	3	8	14¾	224	83,104	20	371	10
	4	9	8	284½	108,963	20	383	ditto.
	5	12	8	366	138,348	22½	378	ditto.
	6	27	9½	1969	350,482	23	178	June 11.
	7	14	15	866	138,560	20	160	ditto.

gardener and other workmen there to take the ducks and other water-fowls under water ; whereupon they shot magpies and crows, and threw them into the canal, which the pike took before their eyes. Of this they acquainted their lord, who thereupon ordered the slaughterman to fling calves' bellies, chickens' guts, and such like garbage to him to prey upon, but being soon after neglected he died, as supposed for want of food."

Instances are mentioned of the pike having attempted to swallow too large a fish, part was left hanging out of the mouth, till the rest was digested ; but some remarks of Professor Jurine of Geneva, may serve to explain this upon a different principle. In the lake of Geneva, perches fished in the winter from a depth of forty or fifty fathoms, frequently have their stomachs crammed up to the very mouth, a circumstance sometimes, though more rarely, observed in the burbot¹. This the author endeavours to explain, by referring to the sudden diminution of pressure upon the air contained in the swim-bladder, and in the abdominal cavity, when the fish is dragged rapidly to the surface of the water. The dilated air bursts through the envelopes ; and, unable to find an exit, it pushes before it the organ which presents the least resistance, namely, the stomach, which it reverses, and heaves up to the mouth. The swim-bladder is not, in such cases, burst, but usually flaccid. If this be correct, the perch is not so much of a glutton, as to a careless observer it might at first appear.

(1) In Latin, *Gadus Lota*.

WATER INSECTS.

Next to spawn and young fish, there is a considerable supply of food derived from insects which frequent the water, more particularly the grubs and maggots that live in water, and often in great abundance. The grubs are the young of beetles, of day flies and caddis flies with four wings, and the maggots are the young of gnats and crane flies with two wings. As these grubs themselves lead a predatory life, and are exposed to the attacks of their own kindred as well as of fishes, they are provided with various means of eluding their enemies, either by living in the recesses of water plants, under stones, or at some depth in clay or mud; or by constructing for themselves a dwelling place into which they can retire securely, when danger threatens. Though these grubs and maggots, therefore, may be in great profusion, the fish can only take them by surprise, and would fare but scantily if they had no other resource.

It consequently opens up a fine variety of baits to the angler, who can easily dislodge these grubs and maggots from their lurking places in the waters, and employ them to entice the fish that are fond of them, but have not the means of securing such prey at their pleasure. It may on this account be useful to describe and figure a few of these, to enable the beginner to find and to recognise them in the water; and I shall begin with what are well known to anglers under various names.

Caddis-worms, Cad-bait, or Ruff-coats.

The grubs, which are known by the name of caddis-worms, case-worms, cad or cod bait, and ruff-coats, are the young of flies, which are usually of considerable size, with four large dull-coloured wings, lying in a sluggish like manner along the back. The various species are known to anglers by the name of stone flies, dun-cut, granam or green-tail, alder fly, willow fly, spring fly, and caddew fly; and to naturalists as *Phryganidæ*, *Leptoceridæ*, and *Philopotamidæ*, of which above 150 species have been found in Britain.

One of the grubs in question forms a pretty case of withered leaves glued together lengthwise, but leaving an opening sufficiently large for the inhabitant to put out its head and shoulders when it wishes to look about for food. Another employs pieces of reed cut into convenient lengths, or of grass, straw, wood, &c., carefully joining and cementing each piece to its fellow, as the work proceeds; and he frequently finishes the whole by adding a broad piece longer than the rest to shade his door-way over head, so that he may not be seen by any fish above. Another of these aquatic architects makes choice of the tiny shells of young fresh water muscles, and snails, to form a moveable grotto, and as these little shells are for the most part inhabited, he keeps the poor animals close prisoners, and drags them without mercy along with him. These grotto building grubs are by no means uncommon in ponds; and in chalk districts, such as the country about Wool-

wich and Gravesend, they are very abundant. One of the most surprising instances of their skill occurs in the structures of which small stones are the principal materials. The problem is to make a tube about the width of the hollow of a wheat straw, or a crow quill, and equally smooth and uniform. Now the materials being small stones full of angles and irregularities, the difficulty of performing this problem will appear to be considerable, if not insurmountable: yet the little architects, by patiently examining their stones, and turning them round on every side, never fail to accomplish their plans. In other instances, when the materials are found to possess too great specific gravity, a bit of light wood, or a hollow straw, is added to buoy up the case. The grubs themselves are admirably adapted for their mode of life, the portion of their bodies which is always enclosed in the case, being soft like a mealworm, or garden caterpillar, while the head and shoulders, which are for the most part projected beyond the door-way in search of food, are firm, hard, and consequently less liable to injury than the protected portion, should it chance to be exposed. These grubs



Figures of four caddis worms in variously formed cases.

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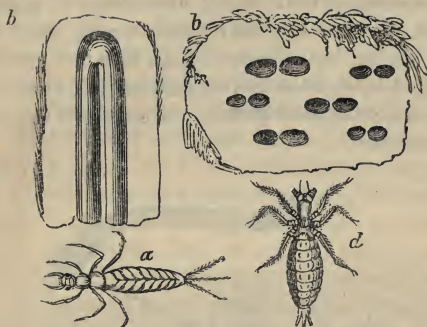
Figures of four caddis worms in variously formed cases.

when taken from their cases, make excellent baits for almost every sort of fish ¹.

Grubs of Day Flies, and other Insects.

The grubs or young of the various species of day flies known to naturalists by the term *Ephemeridæ*, and to anglers by the various names of duns, drakes, and may flies, such as the dun drake or march brown, the blue dun, the green drake or green may fly, are often found in considerable abundance about the roots of water plants, and in the clay forming the banks of ponds and canals, in which they excavate burrows for themselves under the level of the water, an operation well described by Scopoli, Swammerdam, and Réaumur. The excavations are always proportioned to the size of the inhabitant ; and consequently, when it is young and small, the hole is proportionably small, though, with respect to extent, it is always at least double the length of its body. The hole, being under the level of the river, is always filled with water, so that the grub swims in its native element, and while it is secured from being preyed upon by fishes, it has its own food within easy reach. It feeds, in fact, if we may judge from its *egesta*, upon the slime or moistened clay with which its hole is lined. In the bank of the stream at Lee, in Kent, I found an old willow stump full of holes stuffed with clay, in which the grubs in question nestled securely.

(1) For other details respecting these, see my *Insect Architecture*, chap. x.



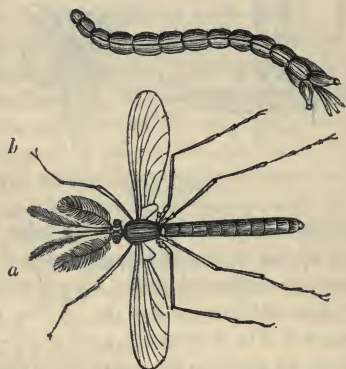
a, grub of Ephemera; *b b*, perforations of Ephemera Grub; *d*, grub of Dragon-fly.

Several grubs which do not excavate holes like the preceding, are not very unlike them in general appearance, though usually much larger, such as the grubs of various species of beetles, and of dragon flies, of which the one marked *d* in the figure is an example. These usually trust for safety to the protection of the roots of weeds or a temporary covering of mud; and what are usually termed blood worms, are found in the same circumstances.

I mean here water blood-worms, and not the smaller bright red earth-worms sometimes so named in books on angling. These water blood-worms, which are not much thicker than a stocking thread, are the maggots of a small gnat¹, very abundant near water. These

(1) In Latin, *Chironomus plumosus*, MEIGEN.

blood-worms are an excellent bait, and it is no doubt on account of their general resemblance in colour to these, that most fish will eat earth-worms, which cannot possibly be their natural food, since they can only come into the water by rare accident. The same may be said of the beetle grubs of the cockchafer and of the dung beetle.



a, Blood-worm ; *b*, the gnat (*Chironomus plumosus*) which springs from it, magnified.

Shell Fish.

In most rivers, lakes, and canals, no less than in the sea, there are several species of shell fish, more particularly those usually termed muscles, of which every species of fish seems to be fond ; probably on account of the difficulty of procuring them, for though the shell must be opened when they feed, it is closed with the

utmost celerity on the approach of an enemy. These muscles, then, or other shell fish taken from their shells, form excellent bait, both for salt and fresh water fishes, though nothing of this kind is in common use with fresh water anglers, besides a paste made from shrimps.

It has been supposed, that by feeding on three or four sorts of shell fish, the common trout has its stomach altered from a soft and membranous, to a hard and fibrous texture, inaccurately said to be similar to a fowl's gizzard. These trouts, which are called gillaroo, are found in Loch Melvin, near Ballyshannon, and Loch Con, near Ballina, in Ireland, and differ little from the common trout, except in being of a bright golden yellow on the belly and fins, with more red spots on the sides, and somewhat broader and thicker in form.

The following remarks of Sir H. Davy show that the common opinion respecting the origin of this difference, is at least very doubtful. Speaking of Loch Melvin, he says, "the common trouts of this lake have stomachs like other trouts, which never, as far as my experience has gone, contain shell-fish; but of the gillaroo trout, I have caught with a fly some not longer than my finger, which have had as perfect a hard stomach as the larger ones, with the coats as thick in proportion, and the same shells within; so that this animal is at least now a distinct species, and is a sort of link between the trout and char, which has a stomach of the same kind with the gillaroo, but not quite so thick, and which feeds at the bottom in the same way. I have often looked in the lakes abroad for gillaroo trout, and never found one."

Water Flies.

Besides the insects or their young which live in the water, there are many others which are fond of playing on, or near, its surface, and in that case are eagerly watched and pursued by fishes. Among these may be reckoned water spiders, water bugs, water measurers, water beetles, but, above all, numerous species of two-winged and four-winged flies, including several moths, all of which are greedily seized by fishes when they can effect their capture. Some of these just mentioned, such as the spiders, beetles, and bugs, may be found at most seasons, whereas the appearance of particular species of flies is periodical, and their existence in the winged state of very limited duration.

Of these flies, the most celebrated amongst naturalists, and little less so amongst anglers, are what I have above termed day-flies¹. M. Réaumur says, it is usually about the middle of August that they are expected by the fishermen in France, and when their season is come they talk of the *manna* beginning to appear, calling the insects by this term on account of the quantity of food for the fish, which falls as the manna is recorded to have done in the desert. On the 19th of August, Réaumur, having received notice that the flies had begun to appear, and that millions of them were coming out of the water, got into his boat about three hours before sunset.

“The countless numbers,” he says, “of the flies

(1) In Latin, *Ephemeridæ*.

which swarmed over the water can neither be conceived nor expressed. When snow falls thickest and in the largest flakes, the air is never so full of them as that which we witnessed filled with *ephemeræ*. I had scarcely remained a few minutes in one place, when the step on which I stood was covered in every part with their bodies, from two to four inches deep. Near the lowest step, a surface of water, of five or six dimensions every way, was entirely covered with a thick layer of them, and those which the stream swept away were more than replaced by the multitudes that were continually falling. I was compelled to abandon my station from not being able to bear the shower of insects, which, not falling perpendicularly like rain, struck me incessantly, and in a manner extremely uncomfortable, pelting against every part of my face, and filling my eyes, nose, and mouth almost to suffocation. On this occasion it was no pleasant post to hold the light, for our torch-bearer had his clothes covered with the insects in a few moments, which rushed in from all quarters to overwhelm him."

I am not aware that we ever have such numbers of those flies in any part of Britain, but I have seen them on the Rhine in immense swarms; and I once observed the great square at Wiesbaden, in Nassau, strewn with their dead bodies, and their white wings spread out, as if a shower of snow had fallen during the night.

Besides these there are many hundred species of flies, both with four wings and two wings, that frequent water, or the banks near water, all of which become, more or less, the prey of fishes, being either

sprung upon while they are alive, or taken when they are dead or dying, while they float down the stream. Amongst these are beetles that haunt trees hanging over water, and hence often fall into it; and in some localities, grasshoppers, which are frequently drowned by making a false spring. Of these, trout and other fish are very fond; and though it is obvious they can seldom obtain them, yet it is surprising to see how many of them, when caught and opened, have their stomachs crammed with grasshopper and other land insects. These are accordingly found to be excellent bait, and a number of them may be easily dried in autumn and preserved to fish with in the spring, when they are not to be had in the fields. Even crickets, which may, always be had at a baker's, will form excellent bait, from their similarity to grasshoppers.

ANGLERS' IMITATIVE DEVICES.

It is a very simple and obvious contrivance to offer to fish any of the sorts of food above mentioned, with one or more hooks, so concealed in it as not to create alarm till the whole be swallowed, or *gorged*, as it is termed by anglers. For this purpose, as we shall afterwards see, small fish, shell fish, worms, caterpillars, grubs, beetles, flies, and all sorts of insects, are employed to lure particular species of fish to the hooks. It is still more common, however, for anglers to use artificial baits, made in imitation, or pretended imitation, of those that are natural.

I have used the phrase "pretended imitation," as strictly applicable to by far the greater number of what are called by anglers artificial flies, because these very rarely indeed bear the most distant resemblance to any living fly or insect whatever, though, if exact imitation were an object, there can be little doubt that it could be accomplished much more perfectly than is ever done in any of the numerous artificial flies made by the best artists in that line of work. The fish, indeed, appear to seize upon an artificial fly, because, when drawn by the angler along the water, it has the appearance of being a living insect, whose species is quite unimportant, as all insects are equally welcome, though the larger they are, as in the case of grasshoppers, so much the better, because they then furnish a better mouthful. The aim of the angler, accordingly, ought to be to have his artificial fly calculated, by its form and colours, to attract the notice of the fish, in which case he has a much greater chance of success than by making the greatest efforts to imitate any particular species of fly. As this doctrine will, I am aware, be accounted heretical and erroneous by all routine anglers, I shall show that I am not singular in its adoption, by quoting what appear to me the unanswerable remarks of a clever writer on angling, in the new edition of the *Encyclopædia Britannica*.



a, natural Dragon-fly; *b*, imitative Dragon-fly.

“It may be asked,” he says, “upon what principle of imitative art the different varieties of salmon-fly can be supposed to bear the most distant resemblance to any species of dragon-fly, to imitate which we are frequently told that they are intended? Certainly no perceptible similarity in form or aspect exists between

them, all the species of dragon-fly, with the exception of one or two, being characterised by very clear, lace-like, pellucid wings, entirely unadorned by those fantastic and gaudy colours, borrowed from the peacock and other 'birds of gayest plume,' which are made to distinguish the supposed resemblance. Besides, the finest salmon-fishing is in mild weather during the colder seasons of the year, and in early spring, several months before any dragon-fly has become visible on the face of the waters, as it is a summer insect, and rarely makes its appearance in the perfect state till the month of June. If they bear no resemblance to each other in form or colour, how much more unlike must they be, when, instead of being swept down the current, as a real one would be, the artificial fly is seen crossing and re-crossing every stream and torrent, with the agility of an otter, and the strength of an alligator? Now, as it is demonstrable that the artificial fly generally used for salmon bears no resemblance, except in size, to any living one; that the only tribe which it may be supposed to represent, does not exist in the winged state during the period when the imitation is most generally and most successfully practised; and if they did, that their habits and natural powers totally disenable them from being at any time seen under such circumstances as would give a colour to the supposition of the one being ever mistaken for the other; may we not fairly conclude that, in this instance at least, the fish proceed upon other grounds, and are deceived by an appearance of life and motion, rather than by a specific resemblance to any thing which they had previously been in the

habit of capturing? What natural insect do the large flies, at which sea-trout rise so readily, resemble? These, as well as grilse and salmon, frequently take the lure far within the bounds of the salt-water mark; and yet naturalists know that no such thing as a salt-water fly exists, or at least has ever been discovered by their researches. Indeed, no true insect inhabits the sea. What species are imitated by the palmer, or by three-fourths of the dressed flies in common use? An artificial fly can, at the best, be considered only as the representation of a natural one that has been drowned, as it is impossible to imitate the dancing or hovering flight of the real insect over the surface of the stream; and, even with that restricted idea of its resemblance to nature, the likeness must be scarcely perceptible, owing to the difference of motion, and the great variety of directions in which the angler drags his flies, according to the nature and localities of the current, and the prevailing direction of the wind.

“The same observations apply, with almost equally few exceptions, to bait-fishing. The minnow is fastened upon swivels, which cause it to revolve upon its axis with such rapidity, that it loses every vestige of its original appearance: and in angling with the par-tail, one of the most killing lures for large trout, the bait consists of the nether half of a small fish, mangled and mis-shapen, and in every point of view divested of its natural form. The accomplished angler does not condescend to imitate specifically, and in a servile manner, the detail of things; he attends, or ought to attend, only to the great and invariable ideas which are inhe-

rent in universal nature. He throws his fly lightly and with elegance on the surface of the glittering waters, because he knows that an insect, with outspread gauzy wings would so fall; but he does not imitate, (or if he does so, his practice proceeds upon an erroneous principle), either in the air or in his favourite element, the flight or the motion of a particular species, because he also knows that trouts are not very conversant in the peculiarities of species, and that their omnivorous propensities induce them, when inclined for food, to rise with equal eagerness at every minute thing which creepeth upon the earth or swimmeth in the waters. On this fact he generalises—and this is the philosophy of fishing.”

It would be easy to prove these sound scientific remarks by the actual practice of the best routine anglers, who will, no doubt, treat them as arrant heresy; for all their success must depend upon these very principles, even while they imagine they cannot angle without a great variety of flies—without flies adapted to each particular river, as well as to each season of the year, and to the morning, noon, or night of the same day. I cannot better illustrate the principle, indeed, than by the following narrative from “Barker’s Delight.” In treating of the Hearing of Fish, I have mentioned that Barker went out in the dark and had good sport, by baiting with lob-worms.

“The night,” he goes on to say, “began to alter and grow lighter. I took off the lob-worms, and set to my rod a white palmer-fly, made of a large hook; I had good sport for the time, until it grew lighter; so I took

off the white palmer, and set to a red palmer, made of a large hook; I had good sport until it grew very light: then I took off the red palmer, and set to a black palmer; I had good sport, and made up the dish of fish. So I put up my tackles, and was with my lord at his time appointed for the service. These three flies, without the help of the lob-worms, serve to angle all the year for the night; observing the times—as I have shewed you—in this night-work; the white fly for darkness, the red fly in medio, and the black fly for lightness. This is the true experience for angling in the night, which is the surest angling of all, and killeth the greatest trouts.”

Barker, it may be remarked, acted throughout on the principle of contrasting the colours of his flies with that of the water, and never once dreamt of ascertaining whether there were white or red palmers on the water, any more than whether there were lob-worms swimming in it when he commenced.

It tends strongly to corroborate our principle, that Bainbridge, who is the best authority on the species of flies, expressly says, respecting a gaudy artificial fly for salmon, that, “however fanciful or varied in shade or materials, it will frequently raise fish when all the imitations of nature have proved unsuccessful; indeed so fastidious and whimsical are the salmon at times, that the more brilliant and extravagant the fly, the more certain is the angler of diversion.” Sir H. Davy again says, “I imagine salmon take the gaudy fly, with its blue kingfisher and golden pheasant’s feathers, for a small fish. I never saw a dragon-fly drop on the

water or taken by a fish." "We have known the salmon," says another intelligent writer, "as well as the trout, so capricious, as often to prefer a *fancy* fly, without having any prototype in nature, to all others, whether real or imitative."

TIMES OF FEEDING AND HAUNTS OF FISH.

MOST fish are peculiarly night-feeders, and though, like other night-feeding animals, they occasionally feed in the day time, it is not their constant or usual habit; and hence the very common disappointment of anglers, who often find, in spite of their most alluring baits, that "the fish will not bite." I have frequently remarked, that spiders, all of which feed in the night, are tempted to come abroad when the weather is dull and overcast, so as to resemble twilight, and it is precisely the same with most fish; with this farther peculiarity, that even in bright sun-shine, the muddy state of the water, from recent floods or other causes, will darken their light, and entice them to look out for prey. This, though one of the most important principles upon which the angler must rely, has not hitherto, that I am aware of, been brought into prominent notice in books on angling, but is left to be gathered from vague and diffuse accounts of the water and the weather.

In bright weather, accordingly, during the greater part of the day, even in more dull weather, at least when the water is very clear, most, if not all sorts of

fish keep to their places of retirement, some amongst reeds and other water-plants; some under banks, or the shade of overhanging trees; some under stones; and some squatting close to the gravel, sand, or sludge, at the bottom of the water.

When the sun begins to set, they quit their hiding places for the more open parts of the water, the river fish almost uniformly making for the centre of the stream, or the edges of a current or eddy where they find other fishes resort, and by coming behind the smaller ones, they often succeed in swallowing them before they are aware of their enemy's approach. It is in such eddies and currents also where the more precarious supply of insect food is to be met with; and here of course the angler is most certain of finding good sport, which, if he choose to follow it up, will continue all night, and for some time after sun-rise next morning, this depending, of course, on the brightness or dulness of the water and the weather, as I have already explained.

In different waters, however, there are peculiarities of currents, eddies, and pools, that fish are fond of haunting, concerning which no practical general rules can be laid down. The angler must therefore find these fish-haunts out by repeated trials, and store up the experience he may thus acquire in his memory. In the Ayr and the Lugar, I used to know every corner where I was likely to raise a trout; but on going to streams of a different character, such as the Cart, in Renfrewshire, I had to make many trials before I found out the peculiar haunts of the fish.

STRENGTH OF FISHES.

HAVING thus discussed the chief points with respect to food, that it is requisite for the angler to be acquainted with, it may be useful to notice a subject uniformly omitted in books on angling,—the peculiar strength which fishes can, or may exert, when they find themselves hooked. This is important from the consideration, that if the angler's lines are not strong enough to stand the shock, or unless some device is used to weaken its force, they must inevitably snap and the prize be lost. At the same time, it is no less certain, that if, in order to be secure from such accidents, he use a very thick line, he runs the chance of scaring the fish, and preventing them from taking the bait. The strength of fish in the water, must, it is obvious, depend on their power of swimming.

THE SWIMMING OF FISHES.

THE tail, with its peculiar fin, more or less plaited, is the principal instrument used by fish for making their way through the water. It acts very much like the sculling oar of a boat, and though it in part, like such an oar, serves to direct the line of motion, this is only a secondary circumstance, and not, as is the case with the tail of birds, its primary function.

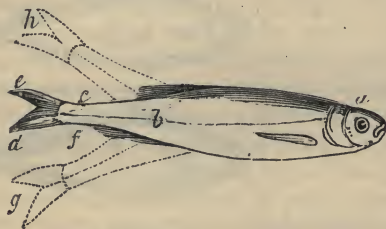
A long and broad tail, therefore, and large fins, are favourable for acting upon the resistance of water,

and consequently for swimming. The bulk of the body in fishes increases from the tail to the head, while the extent of surface, on the contrary, follows an opposite principle ; for, the tail, in consequence of its least thickness, the magnitude of its fin, and the other fins of the back and the vent which act as auxiliaries, has more surface, in proportion to its bulk than the body. It is owing to the difference of bulk, which exists between the body and the tail, including the tail fin, and to the extent of surface which the tail and its fins present, that fishes find a point of support to direct all their strength, and yield a necessary mobility to the anterior parts of their bodies.

It may be remarked, that the jointed, gristly rays of the tail fin, as well as of the other fins, perform a similar office of spreading out or of narrowing the surface, as the sticks of a fan ; and consequently, the progress which is made by the fore part of the body, by the spreading out of the tail fin, may, to a certain point, be independent of the will, in the same way as the outstretched limb of a man, who is standing up, will involuntarily incline to the ground. Let us suppose that a bow, the ends of which are of unequal thickness and proportions, be bent and unstrung in the water, there will be more influence exerted by the water upon the end which has the greater surface in proportion to its bulk, than upon that whose mass is more considerable, and the bow will be displaced and carried farther on the heaviest side.

It is in this way that, the water offering resistance

to the quick strokes of the tail-fin behind, progressive motion is wholly caused by the extension of the curvature of the body, or, in other words, by the unbending of the bow, including, of course, the bending of the tail as a portion thereof. The fore part of each curvature, or bending, having more weight and proportionally less surface than the hinder part, turns round the point of support furnished by the last.

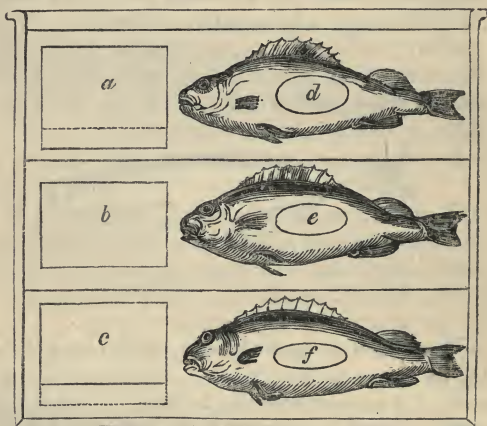


The order of the motion is this: the fish extends the tail towards *g*, so that while *b, c*, is turning round the centre *b*, it is not straight like the rays ¹ of a circle, but makes a sort of wavy sweep, the first *d, e*, being at the same time contracted. When arrived at *g*, it pushes backwards against the water, and is of course pushed on in the direction of *b, a*; by which motion it is brought straight again at *b, c, f*; after which a similar stroke is made on the other side at *h*.

The fins of the breast and belly assist the fish in maintaining the balance or level position of the body.

(1) In Latin, *Radii*.

Accordingly, when Professor Borelli of Naples, by way of experiment cut off with a pair of scissors, both the breast and vent fins of fishes, he found that all their motions afterwards were unsteady, and that they reeled from right to left, and up and down, in a very irregular manner.



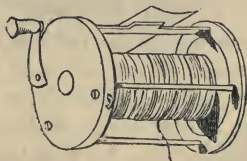
Fish raise themselves in the water by expanding their swim bladder, and consequently lessening their weight¹, as is shown in the figure, where the squares *a*, *b*, *c*, represent the relative expansion of the swim bladders, *d*, *e*, *f*. At *f*, represented by the square *c*, the swim bladder is greatly compressed, and the fish is

(1) Technically, *Specific gravity*.

near the bottom ; at *d*, represented by *a*, it is much expanded, and the fish is near the surface.

The rapidity with which fish swim, and the consequent strength which they must exert, are well illustrated by the whale¹. When struck with a harpoon or spear with a line attached thereto, the leviathan of the waters darts down into the deep with such velocity, that if the line were to entangle, it would either snap asunder or overset the boat. Upon a whale being struck, therefore, one man is stationed to give his whole attention to the line running out clear, and another is employed in continually wetting the place it runs over, to prevent the wood from taking fire by the friction.

On the same principle, but after a much smaller scale, the angler, when he has hooked a large fish, which from its mode of action he infers would easily snap his line asunder were he to pull it up tight, allows his line to run out as the whale-fishers do, and for this purpose he is provided with a long line wound on a reel², or winch, called, by Dame Juliana Barnes,



Reel, Winch, Pirn, or Troll.

(1) It may be well to state that modern naturalists do not rank the whale amongst fishes, because it breathes like land animals, has warm blood, and suckles its young.

(2) Provincially, *Pirn*, or *troll*.

“ a renninge vyçe,” and ready to let go at a moment’s notice.

The angling books are full of directions how to weary out and land a large fish; but, after all, little can be taught on this subject without actual experience. “Never,” says Sir H. Davy, “allow a fish to run to the weeds, or to strike across the stream; you should carry him always down the stream, keeping his head high and in the current: if in a weedy river you allow a large fish to run up the stream, you are almost sure to lose him.” “If a fish,” says Best, “resists very much, give him line enough, which will soon exhaust his strength; and when you pull him towards you, do not do it violently; for if you do he will launch and plunge in such a manner, that though he may not be able to break your tackle, yet he will tear away his hold; but if you feel him come easily towards you, wind up your line, until you see him; then if he struggles very much, give him line again; and so proceed till you have killed him.”

WEIGHT OF FISHES.

EXPERIENCED anglers can tell with miraculous exactness the weight of the individual fish they may chance to hook, before they have seen it to judge by its dimensions, and the late Sir H. Davy had extraordinary tact in this way; but it is impossible to acquire such a tact except by long experience. When a fish has once been fairly landed, however, as near an estimate of its weight may be come at by taking its dimensions and referring them to a given standard, and

for the purpose of measurement, it may be convenient to have the butt end of the fishing rod marked with a scale of feet and inches. Sir H. Davy's standard was a trout 17 inches in length, and 9 inches in breadth, weighing two pounds. According to this standard, then, by the mathematical rule, that similar solids are to each other in the triplicate ratio of one of their dimensions, a trout measuring about 24 inches will weigh about five pounds ten ounces.

PRACTICAL LESSONS IN ANGLING.

THE beginner who has made himself acquainted with what I have above stated respecting the food, haunts, and feeding time of fishes, will be in some measure prepared to understand the lessons I now purpose to give, with reference to particular waters, and to various species of fish ; for though some principles apply generally to all the branches of the art, there are many peculiarities which require to be studied. To some of these I shall direct the special attention of the young angler, and leave him to perfect his skill by practice and experience. I shall arrange my lessons under the several heads of river, canal, pond, lake, and sea-angling.

RIVER ANGLING.

THE peculiar character of a river depends upon the sources of its waters, and the sort of country it runs through. The Aar, the Rhine, and other rivers which rise in the Alps, are of a clear bright greenish blue ; the Dee, the Tweed, and others which rise in sub-alpine countries are dark brown, often in floods approaching to black ; and the Thames, the Seine, the Moselle, and the Maese, which derive the greater portion of their waters from a cultivated country, are usually more or less brownish yellow, in consequence of the clay that bemuds their waters. The usual smoothness

or roughness of their current, as well as its rapidity, will depend on the nature and the slope of the channel towards the sea.

These varying characters of rivers have great influence on the sort of fish by which they are inhabited; and a species, such as the pike for example, which likes to prowl about in slow-running, weedy waters, will not thrive or multiply in the turbulent streams of alpine or mountainous countries, which are the delight of trout, and in many instances of salmon. In treating of River Angling, I think it will, on that account, be better to confine the attention chiefly to the fish which prefer swift-running water, and comprehend the fish of slow-running rivers under Canal Angling. The fish more peculiar to swift-running waters then, are the trout, grayling, salmon, and a few others of inferior value.

ANGLING FOR TROUT.

As this is the most abundant river-fish, as well as of excellent quality, trout fishing is perhaps more universally pursued by anglers, than any other, and therefore I shall be more particular in detail. There are a great number of varieties of trout which different naturalists have deemed to be distinct species; but Professor Jurine of Geneva, who studied their changes for many years, under very favourable circumstances, came to the conclusion that there is only one species¹. The distinctive marks usually taken from the under jaw projecting beyond the upper; the colour of the flesh, white, yellow, or red; the shades of the skin with the

(1) In Latin, *Salmo fario*.

number and form of the spots thereon; the form of the tail, forked or even, and the like, he found were not to be depended on,—and hence the various names of common trout, sea trout, salmon trout, alpine trout, and numerous others, apply only to differences arising from sex, age, season, the character of the waters, and the sorts of food which they can procure. These differences, however, are often very considerable, even among trouts in the same waters, or at least in the mountain brooks and the rivers into which these brooks run, as I have observed myself, when angling, in numerous instances, and as is well known to every angler.

Spawning, Seasons, and Haunts of Trout.

It is of much importance for the angler to attend to the spawning time of trout, as, contrary to what occurs in other fish, it is never good when about to spawn, but in some rivers, such as, according to Bowlker, the Arrow in Herefordshire, the Teme in Radnorshire, and Clunwater, Shropshire, there are barren females which continue good all the winter.

In some rivers, trouts begin to spawn in October, but November is the chief month of spawning. About the end of September they quit the deep water, to which they had retired during the hot weather, and make great efforts to gain the course of the currents, and seek out a proper place for depositing their roe. This is always done on a gravelly bottom, or where gravel and sand are mixed among stones, near the tails

or sides of streams. At this period they turn black about the head and body, and become soft and unwholesome. After the trouts have spawned, they look sick, and lean, and big-headed, are bony, and not good till the spring returns to animate them. In February, when the weather gets milder, the trouts leave their winter quarters in the deeps, for shallow waters and swift streams. They first settle in the eddies of a stream ; and, as they gain strength, they advance nearer the head. They settle for the most part in whirlpools and holes, into which swift streams and shallows fall ; and, growing strong, feed in the largest and swiftest current, especially in the sides and deepest part of them near to their holes. If they are large, they commonly lie under hollow banks, that are worn so by the stream bearing on them ; under the roots of trees, boughs, and bushes, and behind large stones, blocks, and banks, that jut forth in the water, on which streams pressing cause an eddy or whirling back of the water. In such places they delight themselves to lie, constantly waiting and watching for the stream to bring something down to feed upon, either at top or bottom. Sometimes, for want of a better covering, they lurk under sedges and weeds, the better to surprise their prey ; in mill heads and dams ; and in those streams where the dam runs into the river, and in deep swift streams at floodgates and weirs. “ Large trouts,” says Sir H. Davy, “ always hide themselves under the same bank, stone, or weed, and come out from their permanent habitations to feed. When they have fled to their haunt, they may be taken there by the hand ;

and on this circumstance the practice of tickling trout is founded. A favourite place for a large trout in rivers, is an eddy, behind a rock or stone, where flies and small fishes are carried by the force of the current, and such haunts are rarely unoccupied, for if a fish is taken out of them, his place is soon supplied by another, who quits for it a less convenient situation."

Trouting Rods.

As without good instruments the best skill will often prove unavailing in the art of angling, I shall here give some directions respecting these, to aid the beginner, till he acquire experience; or if he have the curiosity to make his own rather than buy them at the tackle makers, which is undoubtedly the best way.

All the directions for making rods in the angling books, are founded on the one originally published by Dame Juliana Barnes, in the Book of St. Albans, who says, "how ye shall make your rodde craftily, here I shall teche you. Ye shall kytte [cut] betweene Mychelmas and Candlemas [Feb. 2nd.], a fayr staffe, of a fadom and an halfe longe and arme-grete, of hazyll, wyllowe, or ashe; and bethe [bake] hym in an hote ovyn and sette hym evyn; thenne, lete hym coole and drye a moneth." Dame Juliana then proceeds with much minuteness to direct how the several pieces are to be rendered taper, and fitted to join into one rod when wanted for use; "and thus" she concludes, "shall ye make your rodde so prevy, that ye may walke therwyth and there shall no man wyte [know] where

abowte ye goe." Such rods, fitted to put up as walking sticks, are now common enough, but are generally too small for river angling; and those which are made to put up in a bag, are in too many pieces to bend well.

The best rods, according to Bainbridge, are made of ash for the bottom piece, hickory for the middle, and lance-wood for the top-joints. If real bamboo can be procured of good quality, it is preferable to lance-wood. Rose-wood and partridge-wood, from the Brazils may also be used for the top pieces. The extreme length of the top-piece is usually composed of a few inches of whalebone. The rings for the reel line may be made by twisting a piece of soft brass-wire round a tobacco-pipe, and soldering the ends together. They ought to diminish in size as they are made to approach the top, and must form a straight and regular line with each other, when the rod is put up for use.

As the top of the rod is apt to be broken by accident, many anglers carry with them a spare top; but if this is not done, a broken rod may be spliced by cutting the two broken ends with a long slope so as to make them fit neatly together, spreading some shoemakers' wax¹ very thin on each of the cut surfaces, and binding them firmly with waxed thread. To fasten off, lay the fore-finger of your left hand over the binding, and with your right make four turns of the thread over it; then pass the end of your thread between the under side of your finger and the rod, and draw your finger away; lastly, with the fore-finger and thumb of

(1) Provincially, *Rozet*.

your right hand take hold of the first of the turns, and, gathering as much of it as you can, bind on till the three remaining turns are wound off, and then take hold of the end which you had before brought through, and then draw close.

The length of a rod must be regulated in a great measure by the character of the river. A trouting rod is usually made from twelve to fifteen feet, which will enable the angler to cast twelve yards of line with one hand. It should be as light as is consistent with strength and durability, as a heavy rod is cumbersome, fatiguing, and unwieldy, while a light one gives greater facility of casting under hollow banks or among trees or bushes. Care should be taken to have rods sufficiently strong in the middle, where they are otherwise apt to bend too much. As it requires a finer top for fly-fishing than for trolling or ground-fishing, the butt-end may be so constructed as to fit tops of different sizes, and it is useful to have it with a spike screwed to it by which to stick it occasionally in the ground.

Rods are stained and varnished in a variety of ways, as with copal varnish, or caoutchouc dissolved over a slow fire in linseed oil¹. Ash or other wood is easily stained of a cinnamon colour by warming it before the fire and putting over it some aquafortis with a feather.

Trouting Lines.

For fly fishing the line should be about thirty yards

(1) See a variety of the best receipts for varnishes in my "NEW SUPPLEMENT TO THE PHARMACOPŒIAS."

long, and wound on a small brass reel fixed to the butt-end of the rod, and running through rings or staples placed at suitable distances along the rod to the top, so that it may be shortened or lengthened at pleasure, according to the convenience of throwing. The line should run taper from the top of the rod down to the fly, that is, if the first link is composed of thirty-five hairs, the next must be of thirty-four; so leaving out one hair in each link till the whole is completed; then comes the silk-worm gut, on which you should whip all your hooks on to the bend. But the best lines for artificial fly-angling are those that are wove, and are all in one piece, and are to be bought at any of the shops in London where fishing-tackle is sold, and run taper like the lash of a coach-whip, and may be had of any length from thirty to forty yards, or more. These are the only lines that can be used on a winch, because they have no knots to prevent them running glibly through the rings of the rod. By the line being made taper, it may be thrown into any place with a greater exactness, and it will fall much lighter on the water, which will very much increase the sport.

To make a fly-line by hand-twisting when a winch is not used, horse hair from a young grey or white stallion is the best, which must be round and not flat, and sorted in sizes, free from blemishes, laid in clean water for twelve hours, then dried and again sorted with the root ends together. With a view of making the line taper, begin with three hairs, put them level at top and knot them, cut off the other ends so far as they appear faint, leaving all of the same length; then hold

them over the top between the thumb and finger of the left hand, and begin twisting with the right hand, stroking them frequently below the hand that holds them to keep them from entangling, then proceed to the end and knot it; when four of these are finished, make four with four hairs each, four with five hairs, and continue increasing a hair until the quantity requisite to complete the line is done. These links should be then put into cold water for half an hour, which will show whether the hairs shrink in any of the links, and such as do must be retwisted: the four smallest are to be tied together in water knots, leaving the finest (should there be any difference) lowermost. The water knot is thus made:— lay the end of one of the hairs four or five inches over that of the other, and through the loop which would be made to tie them in the common way, pass the long and short ends of the hairs, which will lie to the right of the loop, twice, and, wetting the knot with your tongue, draw it close, and cut off the spare hair.

As many inconveniences attend the use of hairs, either open or twisted, for hook-lines, these are usually made of silk-worm gut, or Indian grass or weed, imported from the East. The gut is more transparent than the grass, and is not so thick, nor in general so round; but is otherwise preferable.

Gut may be had of any degree of fineness; for the same skein is formed of various sizes, as well as of different degrees of quality; some threads being long and round, while others are shorter and flatter. The latter are very exceptionable where a choice can be

made, as they are not only weaker, but streak the water in moving through it, and frighten the fishes. Choose such gut as is round and smooth, of a clear and semi-pellucid appearance, and that is free from yellowish spots, very much like iron-moulds. The best proof of the strength of gut is its hardness; bite it, and if it resists the teeth like wire, that is, does not easily give way, it is good. This should always be done when a thread of gut is taken from the skein; for such as are quickly bitten through, and make little resistance to the teeth, will not hold a fish in a proper manner. Weed is much thicker, and is of a duller, though of a whiter appearance. At first it is very strong, but does not keep so well as gut. Choose your weed as has been directed regarding gut, and take especial care to keep them both in situations free from damp; for, if once mildewed, they are never after to be trusted, though they may bite tough.

Some object to grass, as being apt to grow brittle and to kink in using, but with proper management this may be obviated in the following manner.—Take as many of the finest as can be got; put them into any vessel, and pour therein the scummed fat of a pot wherein fresh, but by no means salt, meat, has been boiled; when they have lain three or four hours, take them out one by one, and stripping the grease off with the finger and thumb (but do not wipe them) stretch each grass as long as it will yield; coil them up in rings, and lay them by; and they will become nearly as small, fully as round, and much stronger than the best single hairs. To preserve them moist, keep them in a

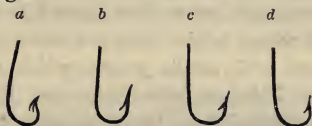
bladder well oiled ; and before using them let them soak about half an hour in water ; if your grass is coarse it will fall heavily in the water, and scare away the fish ; on which account gut has the advantage. But after all, if the grass be fine and round, it is the best thing that can be used.

Trouting Hooks.

It must be obvious that it is of the highest importance for an angler to have hooks well-tempered, that is, which will not readily break or bend. The way to prove this is, by taking the shank of the hook in one hand, and putting the thumb-nail of the other under the bend, when, if it has a spring and returns to the same position, the temper is good. If it be too much tempered, it will snap ; and if too little, it will not spring back, but remain in the position to which it has been forced.

It is reported, that the German Prince Rupert, well known for his experimental skill, in the reign of our Charles I., communicated to Charles Kirby a method of tempering hooks, which remained from that time a secret with Kirby's descendants, and even now the Kirby hooks are esteemed. Neither the London, the Birmingham, nor Dublin hooks are good, because they are manufactured to sell cheap. Kendal hooks are in considerable reputation as to temper, and hold well, though they are not so readily fixed by the pull in the mouth of the fish. " Many anglers," says Carroll, " do not approve of the Kirby bend, particularly in large hooks ; they prefer the hook that is bent in a line with

the shank, as being the best for holding a large fish." A hook ought never to be chosen whose point stands much outwards, as it often only scratches the fish without laying hold. The celebrated Limerick hooks made by O'Shaughnessy, by far the best tempered of any in the market, being capable of holding a fish of 30lbs, stand a very little outwards, which is certainly an advantage.

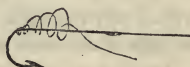


a, Limerick hook ; *b*, Kendal hook ; *c*, Sneck-bend ; *d*, Kirby-bend.

The soft steel for making hooks is made by cementing with charcoal good soft malleable iron, such as is procured from the nails of old horse shoes, till it is converted into steel. It is then formed into bars, or small rods, of a thickness varying according to the size of the hooks intended to be made. The bars for the fine hooks are a little flattened ; those for the larger sorts are cut into lengths of from three to four inches, sufficient for two hooks, and are then in the form of a double-pointed spear.

The artist requires a hammer, a knife, a pair of pincers, an iron semi-cleam, two files, one finer than the other, a wrest, a bender, long and short tongs, and an anvil. Let the rod be heated in a charcoal fire, when the barb or witter may be raised with the knife, taking care not to cut too deep. The point is then, after cooling, sharpened by filing it on a piece

of hard wood, with a dent to receive the bar. The shank is next thinned, flattened, the upper part made square, and the whole worked off with the polishing file. Again let it be put in the fire, and bent by a turn of the wrest round circular pincers. It is now cut from the bar, put into the fire a third time, and brought to a slight red-heat, and, taking it out suddenly, it is plunged into cold water. The temper is given by placing it on an iron heated in the same fire till it becomes bright blue, and while still hot it is surrounded with candle grease, which gives it a black colour. This completes the process. The sizes of hooks are numbered from No. 1, which is the largest, to No. 13, the smallest.



Arming, Whipping, or Ooping.

For fixing the hook to the gut, grass, or hair, which is termed *arming* or *whipping*⁽¹⁾, use small but strong silk, well rubbed with shoemaker's wax, after having smoothed the shank with a whetstone, to hinder its fretting. From a straw's breadth below the top of the hook, wrap the silk about the bare shank until it comes to the top, which will prevent its slipping, or cutting the line from frequently using; then lay the hair or gut on the inside, never on the outside, as that

(1) Provincially, *Whooping*, or *Ooping*.

will chafe it, and whip with the silk downwards, almost to the bend of the hook. The colour of the arming silk should be as near that of the baits used as may be, and its size regulated by the thickness of the wire, hair, or gut, to which it is joined. "For whipping on a hook," says Hawkins, "take the following directions; place it betwixt the fore finger and thumb of your left hand, and with your right give the waxed silk three or four turns round the shank; then lay the end of the hair on the inside of the shank, and with your right hand whip down; when you are within about four turns of the bend of the hook, take the shank between the fore-finger and thumb of the left hand, and place the silk close by it, holding them both tight, and leaving the end to hang down; then draw the other part of the silk into a large loop; and, with your right hand turning backwards, continue the whipping for four turns, and draw the end of the silk (which has all this while hung down under the root of your left thumb) close and twitch it off."

Artificial flies for Trout.

Since the time of Cotton, minute directions are given in most of the angling books how to make artificial flies; but the greater part of these are not very intelligible. An hour's instruction from an artist in this line, would be better than all the printed directions ever published; but that my little work may not be considered altogether wanting on this point, I shall mention what I deem requisite, premising that, like most anglers, I have rarely used any

flies besides those of my own dressing; and so far from troubling myself to imitate the forms and colours of any natural fly, as Best and others advise, I have always killed more fine trout with flies altogether unlike nature.

There are in artificial flies three different parts to attend to; the body, the wings, and what is called the *hackle*, meant to represent the legs; and according to the sort of materials used, and the colours of these, the various flies are produced. A sharp pen-knife and a fine pair of scissors are requisite.

For the body, the materials are soft shoemaker's wax, and silk of all colours and degrees of fineness, for binding or whipping, with gold and silver fine wire flattened or twisted. The long plumelets or beards, called *herls*, of ostriches' and peacocks' feathers, are also used in the same way for binding along with silk or gold thread.



Dubbing.

The principal materials, however, for making the body, and which go under the general term *dubbing*, are various sorts of wool, fur, or hair, the finer sorts

of which are, before using, spun loosely around the binding silk, by twisting it between the fingers.

The sorts of wool are procured from carpeting or worsted of all colours, untwisted and sorted in parcels. Hogs' down is combed from the roots of the bristles, and dyed of various colours. This, as well as bears' hair, is good for mixing with sheep's wool, as it repels the water better. Besides these, the bodies of flies are dubbed with camels' hair, badgers' hair, spaniels' hair taken from behind the ear, seals' hair to be procured at the trunk-makers'; the furs of the squirrel, hare, rabbit, fox, otter, ferret, mole, mouse, rat, hamster, and, in short, every other fur that can be procured, may be used, either of their natural colours or dyed.



Artificial wings made of feathers.

For the wings of the flies, the only material is the feathers of birds of all colours, both dull and gaudy, a few of the plumelets being stript from the shaft of a feather for this purpose, as may be seen in the figures above. The feathers in most repute among anglers are those from the back and breast of the mallard or wild drake; the wing of the starling, the jay, the field-fare, landrail, blackbird, thrush, watercoot, pheasant, grouse, woodcock, and plover; the neck and wings of

the heron ; the tail of the turkey-cock ; the crest of the lapwing, and, in short, almost every sort of feather that can be procured.



Hackles for the legs of artificial flies.

For the legs, which are the least resembling nature of any other part of an artificial fly, a similar variety to the preceding, or what are termed hackles, are used. These hackles are the long loose feathers which form the tail coverts of the cock and pheasant, and which also hang down from the head and back of the neck. The black and bright reddish brown hackles are the best, but they may be dyed of any colour required. The artificial flies called palmers, pretended to imitate the tiger caterpillar, are chiefly made of these hackles, with various dubbings without any wings.



Mode of fixing the hackles.

Fly-angling for Trout.

The usual way in fly-fishing is to have one fly on the end of the line, termed a *stretcher*, and one or more, termed *droppers*, hanging from the line behind the *stretcher* by a length of link sufficient to let them just tip the water when the line is a little raised and drawn along.

As considerable art is required in throwing the line, so as to make the flies fall lightly on the water, and not scare the fish, I would recommend a beginner to observe some good fly-fisher, and then practise as nearly as he can, after him, at first in a purling stream or rapid current, till he can cast dexterously in stiller water. It is useful, also, to commence with a short line, increasing it by degrees, for it is impossible for a beginner to throw eighteen yards at first, and he cannot consider himself out of his apprenticeship till he can throw twelve or fifteen yards without cracking off his flies or entangling his tackle.

“In casting your line and flies,” says Carroll, “observe to make a semicircle with your rod, in order to avoid snapping your flies, and after you have made your cast, raise the point of your rod to prevent too much of your line from falling into the water ; properly no more should fall than what your flies are attached to. Manage so as to let your flies drop lightly on the water, which, with a little well directed practice, you will soon attain. Begin to fish at the head of a stream, and use caution, for there generally the best game lies, particularly when there are flies coming down the river.

When you cast your flies across the stream, keep them in gentle motion to prevent the trouts from perceiving the cheat ; if you give them too long a time they discover it, or if they take it, when they perceive the fraud, they quickly disengage themselves. If it is a slow-running water, let your flies sink a little as you draw them towards you."

If a trout may be observed to rise at any insect that may chance to be on the water, let the artificial fly be offered him, by throwing it, not directly over the spot, but about a yard higher up the stream ; and if he is inclined to rise again, he will probably meet it half way. A dexterous angler, however, who can throw a fly within a hair's breadth of the spot he wishes, will cast as near to the trout as possible, so as not to alarm him.

The beginner will often be tantalised with trout rising at his fly without taking it, and if any of these chance to be pricked with the hook and get away, they will not again rise readily at the artificial fly, any more than a bird will allow itself to be caught twice in a fowler's net. In such cases I think there is something in the smell, or rather the want of smell in the artificial fly, more than in its appearance, which deters the fish ; for I have often, in such cases, succeeded in raising and hooking pricked and shy trout which refused my fly, by putting a small caddis-worm, the body of a large gnat, or other insect on the hook. Sir H. Davy, however, says, " I have known very shy fish refuse even a hook baited with the natural fly."

In striking a fish that rises at the fly, some skill is

required not to lose the fish or break the line, and this must be regulated by what appears to be the size of the fish ; for if small, it may be at once swung out on the bank, which is the most successful way in par fishing ; while the attempt to do this with a trout of any size would be vain. When a fish, on being hooked, descends beneath the surface, and struggles below in the deep water, it may be safely inferred that he is securely hooked ; whereas when he flounders on the surface and tries to leap out of the water, the hook is seldom very deep. With larger trout, the rod should be kept bent, so as to prevent him from running to the end of the line. The strength of the line or rod should never be trusted to without the assistance of a landing net. When the angler is in the midst of the stream, if from the moment the trout is struck, it is prevented from redescending in such a manner, that the upper part of its head and eyes are retained above or on a level with the surface, it will for the space of a good many seconds be so much astonished as to be incapable of any active exertions, and will frequently allow itself to be drawn in that position, and without resistance, straight ashore. "When a fish," says Sir H. Davy, "is hooked in the upper part of the mouth by the strength of the rod applied as a lever to the line, it is scarcely possible for him to open the gills as long as this force is exerted, particularly when he is moving in a rapid stream ; and when he is hooked in the lower jaw, his mouth is kept closed by the same application of the strength of the rod, so that he is much in the same state as that of a deer caught round the neck by

the lasso of a South American peon, who gallops forwards, dragging his victim after him, which is killed by strangulation in a very short time. When fishes are hooked foul, that is, on the outside of the body, as in the fins or tail, they will often fight for many hours, and in such cases are seldom caught, as they retain their powers of breathing unimpaired; and if they do not exhaust themselves by violent muscular efforts, they may bid defiance to the temper and the skill of the fisherman."

Seasons for Fly-fishing, with their peculiar Flies.

The changes of colour caused in rivers by rains and flood, renders a change in the modes of angling indispensable. During a flood the water is too thick for the fly to be seen; but when the water becomes of a clear brown it is the best for the fly. When the water and weather are clear, small flies are to be used; and larger ones early in the morning and evening, or when the water is dark and the weather cloudy or windy, so as to curl the water.

As experienced routine anglers are very particular in selecting flies for particular months, I think it will be convenient to mention a few of these, though the principles which I have above laid down will show that much of what is supposed to be attractive, or, as it is termed, *killing*, in those particular flies, is altogether imaginary.

Flies for February.

This month is rather early for fly-fishing; yet some

enthusiastic anglers begin even on fine days in January. The palmers or hairy caterpillars may be used, either the natural—found on warm banks and amongst nettles—or the artificial palmers or hackles, having the body made with black ostrich herl alone, or interchanged with peacock herl, whipped with red silk, or interchanged with gold or silver flat wire. Round this the red or black hackle of a cock is worked so as to stand out all around, as is shown in the figure. The palmers may be varied in colour at the pleasure of the artist. The hooks used are No. 5 and No. 6. Without wings the hackle from the wild duck or the light part of a field-fare's wing may be added, when they are called spring blacks and spring herls.



a, one of the natural palmers; *b*, one of the artificial palmers.

The great dun (*Phryganea*) is also a February fly, and has the body dubbed with mole fur and dark-brown mohair, with dun wings from a wild duck, and a dark grey hackle. The other flies which are named for this month are the little red brown, the dark brown, the small dark brown, and the prime dun.



The prime dun. *a*, the natural fly; *b*, the artificial fly.

Flies for March.

The season now improves, and in the warm cloudy days, which sometimes occur, good sport may be obtained. The leading fly of this month is the dun drake or March brown, and by corruption, Moorish brown (*Ephemera*). The body is dubbed with hare's ear fur and yellow worsted, or with black wool whipped with red silk; the wings are taken from the mottled feather of a partridge's tail; and the hackle is taken from a grey cock. The hooks used are No. 7 and No. 8. Carroll says the trouts refuse every other fly while this is on the water.



The dun drake, or March brown. *a*, the natural fly; *b*, the artificial fly.

Another March fly, which does not, however, belong to the water except by accident, is the cow-dung fly

(*Scatophaga Stercoraria*, MEIGEN). The body is made with a dubbing of lemon yellow mohair and a yellow feather, whipped with yellow silk; and the wings of the greyish blue feather of a hen, a land-rail, or a mallard. The hook is No. 7.



The cow dung fly. *a*, natural fly; *b*, artificial fly.

The other flies named for this month are the palm fly, the great whirling dun, the dark brown, the early bright brown, the late bright brown, the little black gnat, and the blue dun or violet fly (*Ephemera*), found on almost every river. The latter has the body dubbed with light violet worsted, mixed with down combed from the neck of a black greyhound or the roots of a fox cub's tail; the wings from the pale part of a starling's wing, whipped with pale yellow silk. The hooks No. 9 and No. 10 are used.



The blue dun fly. *a*, natural fly; *b*, artificial fly.

Flies for April

The blue dun and the dun drake continue to be the

favourites throughout this month likewise, as are the various hackles or palmers. A good fly for this month is the stone-fly (*Phryganea*), the body of which is dubbed with dark wool, yellow under the wings and tail; or with the dark-brown hair of a bear or the darkest parts of a hare's ear, mixed with yellow worsted or mohair; two or three hairs from the whiskers of a black cat are also useful; the wings from the mottled feathers of a pheasant or peahen, and the hackle from a grey cock. The hooks No. 2 and No. 3 are used.



The stone fly. *a*, natural fly; *b*, artificial fly.

Another April fly is the thorn or hawthorn fly, the body of which is formed of black ostrich herl, or seal's fur died deep black, and mixed with light yellow or buff mohair; the wings may be made with horn shavings, the thin membrane where the pips lie in the core of an apple, or with the palest feather in a snipe or mallard's wing. The hooks No. 9 and No. 10 are used.



The hawthorn fly. *a*, the natural fly; *b*, the artificial fly.

Another well known April fly is the granam or green-tail (*Phryganea*), which has the body dubbed with fur from a hare's face or ear, whipped with grey or green silk; the wings from the wing of a partridge or hen-pheasant, and the hackle from a grey cock. The hooks No. 7 and No. 8 are used.



Granam or green-tail fly. *a*, natural fly; *b*, artificial fly.

Amongst the other April flies are named the yellow dun, the horse-flesh fly, the little dark brown, the red fly, the sand fly, and the black gnat-fly, the latter of which has the body made thick and short, with a strip from a black ostrich's feather, and the wings from a pale starling's feather.

Flies for May.

This is an excellent month for fly-fishing, the weather being now mild and pleasant. A good fly, called the ruddy, has the body dubbed with red wool, whipped with black silk, and wings from a black cock's feather.

The dun-cut (*Phryganea*) is a well known fly for this month, the body of which is dubbed with brown bear's hair mixed with a little blue and yellow worsted, and whipped with green or yellow; the wings from the

wing of a landrail or a brown hen ; and some add, for antennæ, hairs from a squirrel's tail.



The dun-cut fly. *a*, natural fly ; *b*, artificial fly.

A common fly on the water at this season is called the green drake or green May fly (*Ephemera*), the body of which is dubbed with hog's down or light bear's hair mixed with yellow mohair, whipped with pale flos silk, and a small strip of peacock's herl for the head ; the wings from the rayed feathers of the mallard, dyed yellow ; the hackle from the bittern's neck ; and the tail from the long hairs of the sable or ferret. The hook No. 7 is used.



Green drake, or green May fly. *a*, natural fly ; *b*, artificial fly.

The grey drake (*Ephemera*) is similar, but different in colour, having the body dubbed with whitish hogs' down mixed with black spaniels' fur, or white ostrich

herl, whipped with black silk; the wings from the dark grey feather of a mallard; a black hackle with silver twist; and the whisks of the tail from a black cat's whiskers. The hook No. 5 is used.

Another May insect has long been famous under the various names of the oak fly, the camlet fly, down-hill fly, and canon fly. The body is dubbed with dark brown shining camlet, whipped with very small green silk, or is made with a bittern's feather; and the wings from the double grey feather of a mallard, or of a woodcock.



The oak fly. *a*, natural fly; *b*, artificial fly.

The orle or alder fly (*Phryganea*) has the body made of a peacock's herl whipped with very dark red silk; the wings of a dark grey cock's hackle. The hooks No. 6 and No. 7 are used.



Alder fly. *a*, natural fly; *b*, artificial fly.

Among other May flies I may mention the small black gnat, the early spider-fly (*Tipula*), and the small yellow day-fly (*Ephemera*).

Flies for June.

The water being, in this month, in general clearer, the angler requires to be more artful in order to induce the fish to bite.

The red spinner (*Pyrochroa*) is a well-known fly this month, and may be made either larger or smaller. The large sort has the body dubbed with seals' fur, dyed red, mixed with brown bears' hair, whipped with gold twist; the wings from a starling's feather; the hackle from a red game-cock. The hook No. 7. The small sort has the body dubbed with yellow fur from a spaniel's ear, whipped with gold twist; the wings and hackle as in the large sort. The hooks No. 8 and No. 9 are used.



The red spinner. *a*, natural beetle on the wing; *b*, artificial fly.

The other flies for this month are the barn fly, the owl fly, the flesh fly, the peacock fly, the green grasshopper, and various species of gnats.

Flies for July.

The greater abundance of insect food renders the fish very shy of biting, and now little sport can be had except with a very fine line, and in windy or showery weather. Besides the various species of small gnats and ant flies, the spider fly (*Tipula oleracea*) is mentioned in books of angling, though it is much too large, except in dark water or windy weather, or on rough currents. The body is dubbed with bears' hair or fox cub down, whipped with yellowish or reddish silk; the wings from a partridge or landrail's feather. The hook No. 6 is used.



Spider fly. *a*, natural fly; *b*, artificial fly.

The other flies for this month are the wasp, the badger, the orange, the July dun, and the shell fly.

Flies for August.

The flies continue numerous this month, and may be varied according to the state of the water and the weather. The spider-fly, usually called the jenny-spinner or harry-long-legs (*Pedicia rivosa*), may be made similar to the spider-fly for July.

What the anglers term the hazel fly, or Welshman's button, is a small brown beetle, and has the body made with a peacock's herl; the wings from the red feathers on the rump of the partridge; and a fine black cock's hackle. The hook No. 7 is used.



Hazel fly. *a*, natural beetle on the wing; *b*, artificial fly.

The other flies for August are the fern fly (*Melolontha horticola*), the heath fly, the pale blue, and the white hackle.

Flies for September.

Fly-fishing draws to a close this month, and is seldom pursued after October begins, as the trout begin then to go out of season. Among the flies of this month we may reckon the September dun, the camel brown, the late badger, and the ant-fly (*Formica*),

which is the female of several species of ants. This has the body dubbed with blackish brown cow's hair, whipped with silk of the same colour; the wings from the brown feather of a hen or landrail.



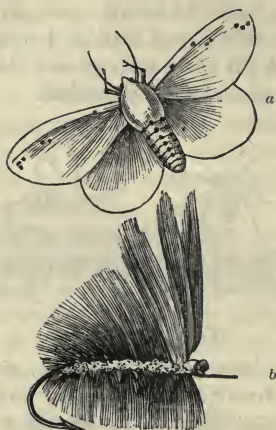
Ant fly. *a*, natural fly; *b*, artificial fly.

Night Fly-fishing.

The interesting account which I have given in a preceding page, from "Barker's Delight," will show better than any didactic precepts the principles upon which night-angling ought to be practised. The flies require to be large and light-coloured, and the more clumsily they are dressed the better. I would always recommend a live caddis worm, or the body of some natural fly, to be put on the hook at the same time.

The flies are usually termed owl or moth flies, and the body may be dubbed with light bear's hair or any whitish fur, or white ostrich herl; the wings from the feathers of a white owl, or of a tawny owl; the hackle from a white or pale yellow cock.

"These flies," says Taylor, "are most killing in warm, gloomy nights, after hot days; and when you angle this way, let out your line to be but a little longer than the rod. You may hear the fish rise as in the day time, and feel them when they take."



Moth or owl fly. *a*, natural moth; *b*, artificial moth fly.

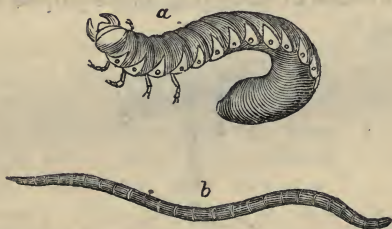
Ground or Bait-fishing for Trout.

Though bait-fishing is not so elegant an art as fly-fishing, those who are fond of angling often practise it, because it will succeed when the water is too dark or thick for the fly; and for many years I had every spring what I considered very good sport in this way, chiefly using the common earth-worm for bait.

It is requisite to lead the line so as to make it touch the ground without resisting the force of the current, the lead being fixed about eight or ten inches above the hook. A good hook for worm angling ought to have rather a long than a short shank, with a moderately deep beard, or witter; hooks No. 2 or No. 3 are good.

In whipping the hook on the line, the link is to be kept on the inside of the hook, and along it a hog's bristle, to prevent the bait from slipping down over the bend.

Earth-worms of various sorts are to be procured by digging in garden ground, turning up stones or the droppings of cattle, amongst rotten thatch and in dung-hills. Gentles, again, are the maggots of flies, which, as well as the maggots of bees and wasps, the grubs of beetles, and the caterpillars of moths and butterflies, may be all used as bait. The earth-worms should be of middle size, and are not so good when they have a knot near the head. They are improved as bait by keeping them without any earth, in moss wetted with milk; but this is not necessary for the brandling, a worm streaked with rings of red and yellow, found in rotten tan, leaf mould, or hog's dung.

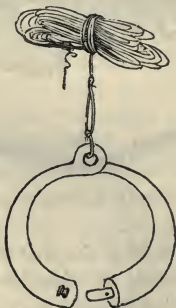


a, the grub of the cockchafer, called by anglers the earth bob;
b, brandling worm.

It is for ground-fishing also that the pastes and roe which I have formerly mentioned are employed with success; but nothing exceeds the caddis worms, and good red earth-worms.

The line may be a foot or two longer than the rod when the stream is gravelly and open, and the water rather clear; but where there are many bushes or trees, or when the water is thick and muddy, the line may be as much shorter than the rod. In an open river it is best to let the point of the rod go before the body, keeping the lead upon the gravel. Carry the top of the rod even with the hand, beginning at the head of the stream, and letting the bait run downwards, as far as the rod and line will permit, the lead dragging and rolling on the ground. No more of the line must be in the water than will permit the lead to touch the bottom, yet the line is to be kept as straight as possible.

In ground-fishing, as well as in most sorts of angling, the line is apt to get entangled among weeds or rubbish, in which case it is necessary to run down the line what is termed a clearing ring, for the purpose of disengaging it.



Clearing ring.

Minnow-fishing for Trout.

This is perhaps a still more active, though not so lively a sport as fly-fishing. The rod required must be stouter and stiffer, and the line about the length of the rod, and stronger than for fly-fishing, with a strong silk-worm gut next the hook, which may be No. 2 to No. 4, according to the size of trout expected to be caught, and these are generally of the largest size. Sometimes two hooks are used, one as small as No. 12, placed back to back, with lead shot on the line, and a lead cap for the bait, as may be seen in the figure.



Minnow hook baited.

Artificial minnows made with mother of pearl, may be bought at the fish tackle shops; but the best is the fresh minnow¹, which may be caught with the hook No. 13, baited with a small red worm, or caddis worm, or with a net; or by embaying a shoal of them in a small pond, as is often done by boys for amusement. When the minnow is put on the hook, the belly fin of one side, and the breast fin of the opposite side, ought to be cut off, to make it play better in the water. The minnow should have the hook entered by the mouth and pointing out at the vent, so as to keep the tail a little bent, which makes it play

(1) In Latin, *Leuciscus Phoxinus*.

better. The mouth should be stitched up, unless the minnow should be so hooked as to close the mouth, which may be done by first putting the hook in at the lower side of the under chap, and also quite through the upper chap, then drawing it two or three inches on the line, and again putting the hook into the mouth and bringing it out near the tail. It ought then to be tried by drawing it across the water, and if it do not turn well, the tail may be bent to the right or left till it is right.

The minnow is chiefly used when the water is beginning to clear after a flood, or while it is rising, and a swift stream is best for giving the minnow a natural motion. It is necessary to have a swivel or two on the line, to make the minnow play easily and to prevent the line from twisting. The line is to be drawn pretty rapidly up the stream, and near the surface. A reel will be indispensable to let the fish run out when he has taken the bait; for he will seldom be caught if struck when he first bites.



Swivel.

Having been so particular and minute with respect to angling for trout, it will not be requisite to repeat many of the details for other river fish which are taken by similar methods.

ANGLING FOR GRAYLING.

According to the Rev. Mr. Low, the grayling is frequent in the Orkney Islands, as it is in Lapland and Switzerland; but it is rare in Scotland, and confined in England to the Avon near Salisbury, the Ure near Fountain's Abbey, the Wye near Tintern Abbey, the Dee between Corwen and Bala, and the Dove; also the Trent, the Wharfe, the Humber, the Rye, and the Derwent.

Grayling may be angled for much in the same way as trout, with the exception of minnow fishing, which, notwithstanding the authority of Walton, is not found to be good. It is a more gregarious fish than the trout, though not so much so as the perch and carp. It spawns in April or the beginning of May; depositing the roe amongst gravel at the tails of swift currents. While trout is a spring and summer fish, grayling is best in season in autumn and winter. It feeds more on the ground than trout, and is not so easily scared, though more difficult to deceive than trout, and likes smaller flies.

"Grayling," says Sir H. Davy, "provided your link is fine, is not apt to be scared by the cast of flies on the water. The fineness of the link, and of the gut to which your flies are attached, is a most essential point, and the clearer the stream the finer should be the tackle.

I have known good fishermen foiled by using a gut of ordinary thickness, though their fly was of the right size and colour. Very slender transparent gut, of the colour of the water, is one of the most important causes of success in grayling fishing. In the Avon and Test, May-flies, and even moths, are greedily taken in the summer by large grayling. Flies, that do not inhabit the water, but are blown from the land, are good baits for grayling. There is no method more killing for large grayling, than applying a grasshopper to the point of a leaded hook, the lead and shank of which are covered with green and yellow silk, to imitate the body of the animal. This mode of fishing is called sinking and drawing. I have seen it practised in this river with as much success as maggot-fishing: and the fish taken were all of the largest size; the method being most successful in deep holes, where the bottom was not visible, which are the natural haunts of such fish. In the winter, grayling rise for an hour or two, in bright and tolerably warm weather; and, at this time, the smallest imitations of black or pale gnats that can be made, on the smallest sized hook, succeed best in taking them. Throughout the summer and autumn, in fine calm evenings, a large dun fly, with a pale yellow body, is greedily taken by grayling after sunset; and the imitation of it is very killing. In the end of October, and through November, there is no fly-fishing but in the middle of the day, when imitations of the smaller duns may be used with great success; and I have often seen the fish sport most, and fly-fishing pursued with the greatest success, in bright sunshine,

from twelve till half-past two o'clock, after severe frosts in the morning; and I once caught, under these circumstances, a very fine dish of fish on the 7th of November."

ANGLING FOR SALMON.

The salmon¹ is accounted by anglers the prince of all fish, and when we consider that they weigh from ten to fifty, or even seventy pounds, it must be obviously a dexterous art to catch them with a hook and line, which one fourth part of that weight would snap asunder. The salmon, is also when in good season, much finer for the table than other fish caught by the angler, and many prefer it to turbot.

Spawning, Seasons, and Haunts of Salmon.

The salmon lives a part of the year in the sea, or at least in the mouths of rivers, near the sea, and about the end of autumn, or beginning of winter, runs up rivers to spawn. In their ascent, there are scarcely any difficulties which these fish will not surmount, ascending rivers for hundreds of miles, being frequently taken in the Moselle, and even as high as Bâle on the Rhine. They will force themselves against the most rapid currents, and will spring up several feet out of the water to clear cataracts and mill dams, a feat I have often witnessed on the river Ayr, during the autumn floods.

When they have got as high up as they can find

(1) In Latin, *Salmo salar*.

water to swim in, they select a rather shallow gravelly stream, in the bed of which, as I have often witnessed in Ayrshire, they make a trench with their nose, and deposit their roe, the male and the female, as it is reported, assisting in excavating the same trench.

The spawn is not hatched till the latter end of March, and by the beginning of May the young samlets, or smouts, are four or five inches long, and are swept down by the first flood to the sea. Here they become salmon in as short a time, says Walton, "as a gosling becomes a goose." About the middle of June some of these come back from the sea, and about the end of July, they take the name of gilse, grilse, or graul, and weigh from five to seven pounds or more.

The salmon delights in large rapid rivers, especially such as have pebbly, gravelly, and sometimes weedy bottoms, and, when feeding, generally prefers the rough and upper parts of gentle streams, and the tails of large ones; after their feeding time, they retire to the deep and broad water, and swim very fast, usually in the middle of the river near the ground, and more at night than in the day, resting at convenient places, under bushes, weeds, banks, or stones, and then the whole shoal run again. Salmon bite best from six until eleven in the forenoon, and from three in the afternoon until sun-set, especially when there is a moderate breeze upon the water; the chief months to angle for them are March, April, May, and June, though they will take a fly until October, but they are then out of season.

Tackle and Methods of Angling for Salmon.

The rod for salmon fishing may be proportioned to the size of the river ; but it ought not to be less than fifteen feet in length. The reel ought to be large enough to contain eighty or ninety yards, so as to admit of abundance of line being given out when required ; for many fish, when struck, run out to a great distance, and with such immense rapidity as to prevent the possibility of the angler's moving in the proper direction with sufficient quickness. A salmon, for the most part, darts violently up the stream ; and, as the command and direction of the fish is more easily kept with a short than a long line, it is advisable to prevent his getting too far ahead, by keeping the rod well back in the opposite direction, and by running towards him along the margin of the stream. When he gains the head of a current, a salmon frequently throws himself several times out of the water, on which occasions the angler must yield him freely a little of the line ; but during his general and less violent manœuvring, he will of course be the sooner exhausted the more firmly he is held. When he appears to be making for some safe haunt, or secret sheltering place, the great object is to turn him towards safer ground, either by relying on the soundness of the tackle, or, if he proves very powerful, as well as very obstinate, then a pebble or two may be thrown, so as to fall a little in advance of his position, and he will probably turn himself round. Some fish become sulky, and will lie after being hooked,

for a long time, motionless near the bottom. In this case also the pebbles must be had recourse to; for the more a fish is kept in motion, the sooner he becomes exhausted. When he begins to show his side, and exhibits other unequivocal symptoms of exhaustion, a favourable landing-place should be looked for; and when the proper time arrives, which can only be learned by the lessons of experience, then is he to be drawn by degrees to the side. Salmon anglers are in general provided with what is called a *gaff*, which is a stick somewhat pliable, with a large barbed hook at the end, for the purpose of thrusting into the gills of the fish, and lifting him out of the water, as a landing net is too small.

The salmon flies require to be much larger—(sometimes as large as a small bird,) and more gaudily dressed than for trout. Several flies of this description have been described in books, of which the following are specimens.



As a spring fly, make the wings of the dark mottled brown or blackish feather of a turkey ; body of orange camlet mixed with a little mohair ; and a dusky red or bright brown cock's hackle, plucked from the back, where the fibres are longest, for the legs. The hook should be No. 2 ; and it has been observed that all large salmon-flies should be dressed upon two or three lengths of gut twisted together, and that the silk in dressing be brought beyond the shank of the hook, and wrapped four or five times round the gut, so that it may not speedily cut by the sharpness of the steel. This same fly, dressed with the wings of a somewhat lighter shade, and with the addition of a little gold wire or thread, wrapped round the body at equal distances, will also serve for a more advanced season of the year.



The Quaker fly is of smaller size, and may some-

times be dressed upon very strong single gut. Any feathers of a coppery or dingy yellow colour, if not too coarse in the fibres, will be suitable for the wings; the body is of lemon-coloured mohair, mixed with a small portion of light brown fur, or camlet, with a pale dusky ginger hackle, over the whole. The chief object to be attended to in dressing this fly, is to produce that uniform hue, devoid of gaudy colouring, from which it has received its name.



For a summer fly the wings are made from the plumes of a cormorant, or from the mottled feathers of a dark mallard: the body is of dark sable, ribbed with gold wire, over which a dusky red hackle is thickly wound; the mottled feathers of a drake are used for the tail; and, previous to fastening off, a small portion of flos silk should be unravelled, and fastened at the extremity of the hook.



The wings of another fly are formed of the extreme end of a Guinea fowl's feather, not stripped, but having the fibres remaining on both sides of the middle stem. A blood red hackle is fastened on with the wings, and so arranged as to extend beyond them : the dyed feathers used by military men will suit, if another showy bird, the scarlet macaw, is not accessible. The green feather which forms the eye of the peacock's tail should be fastened at the head, and left hanging downwards, so as to cover the body for the space of half an inch ; and a few filaments of the same part of the same feather may be fastened at the tail. Another fly has the wings formed from the darkish brown speckled portion of a bittern's wing, stripped off from the stem : the head ought to be of the same colours as the body, which is formed of the reddish brown part of a hare's fur, and deep copper-coloured mohair ; a bittern's hackle is put over the body for legs ; and a forked tail is added, made of a pair of single filaments of the same feather as the wings.



Another good fly: the wings are formed of the mottled feathers of a peacock's wing, intermixed with any fine plain dusky red; the best mixture of the body is the light brown inner hair from a bear's skin, sable fur, and gold-coloured mohair; gold twist, a large black cock's hackle, and a red one a little larger, with a bit of deep red mohair for the head.



In addition to these, we might enumerate the brown fly, the blue fly, the kingfisher, the prime dun, the great palmer, the golden pheasant, the grey mallard, and many others; but such as are above described will suffice.

If small trout or minnow be used to troll with, the foot lengths ought to be about three yards long, and furnished with one or two swivels, to prevent the line from twisting, as well as to enable the bait to play freely. A lead or shot, proportioned to the strength of the stream, should be fastened to the line, about a foot above the bait. The top of the rod should be stiffer than that used for fly-fishing; and when the hook is baited, it ought to be thrown first across, and then drawn up the current.

ANGLING FOR CHUB.

The chub¹, chevin, or bottling, neither affords good sport to the angler, nor a good dish at table, except when salted, though it may afford a few hours' amusement by way of variety. The chub is fond of large rivers with sandy or clay bottoms, and haunts the deep holes and angles of eddies, where the water runs slow and is shaded. The chub spawns about the beginning of April.

Let the line be very strong, with strong silk-worm gut at bottom, and use the hooks No. 3 or 4. The most pleasant way of taking chub is by what is termed *dibbing*, in the following manner. In a hot summer's

(1) In Latin, *Leuciscus cephalus*.

day, go to any hole where chub is known to haunt, and probably thirty or forty of them may be seen basking themselves on the surface of the water. You must be sure to place yourself out of sight behind some bush or tree, for the chub will fly to the bottom of the water at the very shadow of your rod, being the most fearful of all fish, and will also make instantly to the bottom on the shadow of a bird flying over the water, but will presently arise and be floating on the top again; at which time move your rod slowly, let your bait fall softly on the water three or four inches before him, and he will infallibly take it. As he is a leather-mouthed fish, out of which a hook scarce ever loses its hold, you may therefore give him play enough before you offer to take him out of the water.

There are many baits to take the chub, such as a black snail, with its belly slit to show the white: sometimes a worm, or any kind of fly, as the ant fly, flesh fly, dor or beetle, or a bob, which is a short, white worm, like to, but bigger than, a gentle, or a cod or case-worm; he will take any of these very well, and never refuses a grasshopper at the top of a swift stream, or a young wasp-grub at the bottom. These grubs are found in the holes of banks, and discovered by the old ones going in and out, and are often found by the mowers while cutting grass: they must be boiled or baked before used: the chub will likewise bite at red cherries, provided you bait the pool with them the night before you fish. The landing-net is particularly necessary in angling for chub, as the best spots are generally encumbered by trees or bushes.

ANGLING FOR DACE AND ROACH.

The dace¹ is a gregarious fish, which haunts the deeper waters near the piles of bridges, shady pools, and beneath the masses of collected foam caused by eddies. In the warmer months of the year they also congregate in the shallows. They rise at a variety of flies, and are likewise angled for with red worms, brandlings, and the like. Above Richmond, as soon as the weeds begin to rot, a grasshopper used as an artificial fly is found very successful in hot weather among the shallows. This mode can only be practised in a boat, with a heavy stone to serve as an anchor, fastened to about a yard of rope. The boat drifts gently down the stream, and the stone is dropped whenever the angler considers himself in the neighbourhood of a likely place. Standing in the stern, he first throws directly down the stream, and then to the right and left; and after trying for about a quarter of an hour in one spot he again weighs anchor, and proceeds to another station.

Dace may also be taken with flesh flies, or small house flies, which may be kept in a phial stopped with a cork. With these, especially about seven or eight o'clock in a summer's evening, repair to a mill stream, and having fixed three or four hooks, with single hair links, not above four inches long to your line, bait them with the flies, and angle upon the surface of the water, on the smoothest part, at the end of the stream; the dace will rise freely, especially if the sun does not

(1) In Latin, *Leuciscus vulgaris*.

shine on the part of the water where you cast your flies, and you may take two or three at a time. This sport will continue as long as day-light will permit you to see the flies. In the same manner dace will also rise at the ant fly upon the surface of the water, if used in a morning at the foot of a current or mill-stream. If you angle where two mill-streams are going at the same time, let it be in the eddy between the two streams. First use the plummet; if the water is deep, angle within a foot of the bottom, but if it proves to be shallow, that is, about the depth of two feet, or not exceeding three, the sport may be better; bait your hooks with three large gentles, use a cork float, be very attentive, and strike at the first bite; if there are any large dace in the mill pool, they will resort to the eddy between the two streams.

A species of fish called the graining, similar to dace, is found in the Mersey in Lancashire.

The roach¹, though very bony, makes good soup. Roach fishing, in the Thames, commences about the end of August. Great shoals of them come annually up the Clyde and into Loch Lomond and its tributary streams. It is a simpleton of a fish, easily caught, and therefore affording small sport to the angler when any other is to be had. It will, however, rise at a fly, and is to be fished for precisely like dace.

ANGLING FOR BARBEL.

The barbel² is not esteemed for the table; but af-

(1) In Latin, *Leuciscus rutilus*.

(2) In Latin, *Barbus vulgaris*.

fords tolerable sport to the angler. It is a gregarious fish, and roots among the soft banks with its nose, like a sow. The angling season commences in May, and continues till September. The most approved hours are from day-light till ten in the morning, and from four in the afternoon till about sunset. The line should be strong and rather heavily leaded, so that the bait may float about half an inch from the ground. Considerable caution is required in playing this fish, as he is apt to run off, when struck with great violence, towards some stronghold, and in so doing sometimes breaks both rod and line. He is rather nice in his baits, which must be kept clean and sweet, and untainted by musty moss. Never throw in the bait farther than can be done by a gentle cast of the rod, letting the plumb fall into the water with the least possible noise. It is an error to think that large fish are in the middle of the river; experience teaches the fallacy of this opinion; they naturally seek their food near the banks, and agitating the waters by an injudicious management of the plumb will certainly drive them away. It is incredible the quantities of barbel caught by this method.

ANGLING FOR GUDGEON.

The gudgeon¹ is an excellent fish for a beginner in angling to commence with, as he bites freely, and being leather mouthed is never lost when once hooked. These fish delight most in gravelly and sandy ground,

(1) In Latin, *Gobio fluviatilis*.

and in a slow stream ; though they inhabit large rivers, and often little brooks, yet they are chiefly to be found in small rivers of a fine sandy gravel bottom : in the hot months they lie in much shallower waters, but all the rest of the year, from about Michaelmas till April, they dwell in the deepest places that are most sandy. They spawn in the latter end of April or May, and, as some say, three or four times in the year. They may be easily taken with small worms or maggots; by muddying the water and stirring up the sand with a pole you may draw them together in shoals, and by now and then throwing in a few chopped worms or maggots you may take great quantities of them with a bait on or near the ground ; they are usually scattered up and down the shallows of every river in the heat of the summer, but in autumn, when the weeds begin to grow sour or rot, and the weather begins to be cold, they keep together in the deeper parts of the water. If you angle for them with a float or cork your hook must always touch the ground: but many fish for the gudgeon by hand with a running line upon the ground without a float, and it is an excellent way if you have a tender rod and a gentle hand; he bites all day long from March till Michaelmas, but will not bite in very cold weather, nor for some time after spawning, nor immediately after a shower or land-flood ; he bites well in gloomy, warm, or hot sun-shining weather, but seldom before sun-rising, commonly beginning at or about an hour after the sun rises, or after sun-setting, ceasing indeed, about an hour before the sun sets ; perhaps fearing lest he should be

devoured by the larger kind of fish, which are at that time ranging for food.

ANGLING FOR BLEAK, POPE, LOACH, FLOUNDER,
AND MILLER'S THUMB.

The bleak¹, is sometimes called the fresh-water sprat, and sometimes the river swallow, because, like the swallow, it is almost continually in action in the water and sporting with some little flies and insects that float on the surface. He is of a bright whitish colour; his back is of a pleasant sea-green, and his belly shining and white as the mountain snow. The bleak, though generally reckoned of no great value, yet is a good fish if dressed almost as soon as taken. The bleak is to be angled for in mid-water with a line called a *pater-noster*, with five or six small hooks fastened at the distance of about half a foot one above another, and having a bait of small, well-scoured maggots. They may also be taken with a very small fine artificial black gnat. It affords good sport to whip for them in a summer evening from a boat, or standing on the bank-side, in a swift water, with a hazel-top about five or six feet long, and a line twice the length of the rod.

The pope or ruff² is a gregarious fish, found in most but not all, the rivers of England, and is abundant in the Yare, the Cam, the Isis, the Tame, and the Mole, haunting deep slow-running water, with a gravelly

(1) In Latin, *Leuciscus alburnus*.

(2) In Latin, *Cernua fluviatilis*.

bottom. He will take almost any bait, but a red-earth worm or small brandling is to be preferred. The ground ought first to be baited with two or three handfuls of earth. Some use a paternoster line with five or six hooks according to the depth of the water; but when a little muddy the ruffs will bite at all depths.

The loche¹, stone-roach, or beardie, is of a delicate taste and very wholesome; it breeds and feeds in little, clear, swift, gravelly brooks or rills. In growth, it is not above a finger's length, and somewhat resembles the eel in shape, and has a beard or wattles. This fish is esteemed very nourishing and grateful to the palate and stomach of sick persons. He is fished for with a very small worm at the bottom, for he seldom or never rises above the gravel.

The bull-head or miller's thumb² is an odd-looking small fish, having much the same habits as the loach. They spawn in the gravel from April on through the summer. The hook No. 13, with a red worm, is the best for taking it.

The flounder³ or fluke is a small flat fish, not uncommon in the mouths of rivers, but seldom found far from the sea. It grows to the length of a foot, but is usually not half that size. The season for fishing is from April to August. The hook No. 7, whipped on a single line, and baited with worms or gentles, is used in this sport.

(1) In Latin, *Gobitis barbatula*.

(2) In Latin, *Cottus Gobio*.

(3) In Latin, *Platessa fluviatilis*.

ANGLING FOR EELS.

The eel¹ is a migratory fish, which breeds in the sea, and, according to Sir E. Home, is hermaphrodite, like the earth-worm and the snail; while Colonel Bory de St. Vincent conceives the opinion of Rondeletius is correct, that they are male and female, and breed like serpents, bringing forth their young alive. M. Bory, however, at the same time tells us they rarely go to the sea, a mistake for which I am unable to account in so well-informed a naturalist. Count Lacépède is in raptures with the elegance, grace, and beauty of the eel, but few anglers who have had eels come to their trout-bait, and their lines twisted into Gordian knots by their contortive writhings, will probably agree with the count. The haunts of eels are chiefly amongst weeds, under roots and stumps of trees, holes, and clefts in the earth, both in the banks and at the bottom, and in the mud, where they lie with only their heads out, watching for prey; also about flood-gates, weirs, bridges, and old mills, and in still waters that are foul and muddy; but the smallest eels are to be met with in all sorts of rivers. They are taken in great numbers by laying night-lines, fastened here and there to banks, stumps of trees, or stones, of a proper length for the depth of the water, leaded so as to lie on the ground, and a proper eel-hook whipped on each, baited with garden worms, or lob, minnows, hens' guts, fish

(1) In Latin, *Anguilla vulgaris*.

garbage, loaches, small gudgeons, or miller's thumbs, or with small roaches, the hook being laid in their mouths.

CANAL ANGLING.

I HAVE already mentioned, that under this head I mean to comprehend all slow-running and weedy waters, which, though not canals, have a similar character, such as the New River, and the Lea in Essex, so famous as an angling station since, and, I believe, before, the time of Izaak Walton. The ditches in fen countries may also be justly included. In waters like these we find none of the best sorts of fish, which inhabit swift-running streams, such as the trout, salmon, and grayling, though eels and several of the other species which have been already mentioned are found both in slow-running rivers and canals. The fish which I shall now notice are pike and perch.

ANGLING FOR PIKE

Next to trout and salmon, the pike¹ or jack affords the best sport to the angler; for though it will seldom rise at a fly (most authors erroneously say "never"), it will bite greedily and voraciously at almost every bait which is offered to it, and therefore good sport may often be obtained by ground-fishing or trolling for pike.

(1) In Latin, *Esor lucius*.

Spawning Seasons, and Haunts of Pike.

Captain Williamson informs us that "the pike generally spawns in March, though sometimes in the last week of February, or in the early days of April, according as the weather may be more or less mild. At this period the female retires among the heavy masses of weed generally growing at the edges of the waters in shallow places, where she casts her spawn, the male attending her with apparent solicitude. So soon as the spawning is over, both return for a few days to the deep water, and during the middle of the day lie on the surface, basking in a state of torpidity, enjoying the warmth, and for the most part with their faces towards the sun. In this state they are frequently taken by what is called 'haltering' or 'snaring.'"

The pike is fond of quiet, shady, unfrequented water, and lurks in the midst of weeds, flags, or bull-rushes; yet he often makes excursions from these, and ranges about in search of prey. In winter and cold weather he lies deep, and near the bottom, but as the weather grows warm he frequents the shallows. In a very hot, clear, sultry day he may be seen lying on the surface of the water, but then you cannot tempt him with any bait. It is observable that pike generally swim single, as they prey upon each other, and all other fish, except the perch, fly from them. His best biting-time is early in the morning and late in the evening, when there is a brisk wind, and where the water is clear.

Float and Goose-fishing for Pike.

Angling for pike with a float is the one most commended in the Book of St. Alban's by Dame Juliana Barnes, who directs the angler to "take a codlynge hoke, and take a roche, or a fresh heeryng, and a wyre wyth an hole in the ende, and put it in at the mouth, and out at the taylle, down by the ridge of the fresshe heeryng; and thenne put the lyne of your hoke in after, and drawe the hoke into the cheke of the fresshe heeryng; then put a plumbe of lede upon your lyne a yarde longe from your hoke, and a flote in mid waye betwene; and caste it in a pytte where the pyke usyth, and this is the best and moost surest crafte of takynge the pyke. Another manere of takynge him there is; take a frosshe [*frog*] and put it on your hoke, at the necke, betwene the skynne and the body, on the backe half, and put on a flote a yerde therefro, and caste it where the pyke hauntyth, and ye shall have hym. Another manere: take the same bayte, and put it in asafetida, and caste it in the water wyth a corde and a corke, and ye shall not fayl of hym. And if ye lyst to have a good sporte, thenne tye the corde to a gose fote, and ye shall have a gode halynge, whether the gose or the pyke shall have the better."

Barker in his "DELIGHT," tells us, that "the principal sport to take a pike, is to take a goose or gander, or duck; take one of the pike lines I have showed you before; tie the line under the left wing, and over the right wing, about the body, as a man weareth his belt; turn the goose off into the pond where pikes are; there

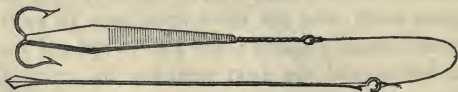
is no doubt of sport, with great pleasure, betwixt the goose and the pike; it is the greatest sport and pleasure that a noble gentleman in Shropshire doth give his friends entertainment with."

M'Diarmid in his amusing work entitled the "SCRAP BOOK," gives a similar account of this curious mode of fishing. "Several years ago," he says, "a farmer in the immediate neighbourhood of Lochmaben, Dumfriesshire, kept a gander, who not only had a great trick of wandering himself, but also delighted in piloting forth his cackling harem to weary themselves in circumnavigating their native lake, or in straying amid forbidden fields on the opposite shore. Wishing to check this vagrant habit, he one day seized the gander just as he was about to spring into the pure breast of his favourite element, and tying a large fish hook to his leg, to which was attached a part of a dead frog, he suffered him to proceed upon his voyage of discovery. As had been anticipated, this bait soon caught the eye of a greedy pike, which, swallowing the deadly hook, not only arrested the progress of the astonished gander, but forced him to perform half-a-dozen of somersets on the face of the water! For some time the struggle was most amusing, the fish pulling, and the bird screaming with all its might, the one attempting to fly, and the other attempting to swim, from the invisible enemy: the gander the one moment losing, and the next regaining his centre of gravity, and casting between whiles many a rueful look at his snow-white fleet of geese and goslings, who cackled out their sympathy for their afflicted commodore. At length victory declared in favour of the

feathered angler, who, bearing away for the nearest shore, landed on the smooth green grass one of the finest pikes ever caught in the castle-loch. This adventure is said to have cured the gander of his propensity for wandering ; but on this point we are inclined to be a little sceptical—particularly as we lately heard, that, at the reservoir near Glasgow, the country people are in the habit of employing ducks in this novel mode of fishing.”

Trolling for Pike.

The mode of angling named *trolling*¹ is precisely similar to minnow-fishing for trout. The trolling-rod has several small rings fixed on every one of its joints ; upon the butt-joint is fitted a reel with its winch. On the reel are wound twenty, thirty, or forty yards of silk line, which pass through the rings on the rod, and are then fastened to the gimp with which the hook is armed. The hook itself is a compound of two small perch-hooks put back to back. Between the hooks hangs a little chain, and at the end of the chain a small plummet. The plummet is to be sewn into the mouth of a dead fish, roach or gudgeon, the hooks being left without, exposed to sight.



Gorge hook and baiting needle.

(1) From the French, “ *Troller to walk.*”

To bait a gorge hook, take a baiting needle, and hook the curved end to the top of the gimp, to which the hook is tied ; then introduce the point of the needle into a dead-bait's mouth, and bring it out at the middle of the fork of the tail, by which means the piece of lead which covers the shank of the hook, and part of the connecting wire, will lie concealed in the interior of the bait: the shank will be in the middle of its mouth, and the barbs on the outside turning upwards. To keep the bait steady on the hook, fasten the tail part just above the fork to the gimp, with a silk or cotton thread ; or a neater method is, to pass the needle and thread through the side of the bait, about half an inch above the tail, so as to encircle the gimp in the interior. The baits used vary in weight from one to four ounces, and the hooks must be proportioned to the size of fish with which they are to be baited. The barbs of the hook ought not to project much beyond the sides of the mouth, because, as the pike generally seizes his prey sidewise, and turns it before it is pouched or swallowed, if he feels the points of the hooks he may cast it out entirely.

The bait thus fastened, is to be kept in constant motion in the water, sometimes suffered to sink, then gradually raised ; now drawn with the stream and now against it, the better to counterfeit life. " After trying closely," says Salter, " make your next throw further in the water, and draw and sink the baited hook, drawing it straight upwards near to the surface of the water, and also to right and left, searching carefully every foot of water, and draw your bait with the stream, because you

must know that the jack and pike lie in waiting for their food with their heads and eyes pointing up the stream, to catch what may be coming down; therefore experienced trollers fish a river down, or obliquely across; but the inconsiderate as frequently troll against the stream, which is improper, because they then draw their baited hook behind either jack or pike when it is stationary, instead of bringing it before his eyes or mouth to tempt."

"When the pike cometh," says Colonel Venables, "you may see the water move, at least you may feel him; then slack your line and give him length enough to run away to his hole, whither he will go directly and there pouch it, ever beginning (as you may observe) with the head, swallowing that first. Thus let him lye untill you see the line move in the water, and then you may certainly conclude he hath pouched your bait and rangeth about for more; then with your trowl wind up your line till you think you have it almost straight, then with a smart jerk hook him, and make your pleasure to your content."

Spinning for Pike.

A clever writer who signs "Titus" in Blackwood's Magazine, says, "you may *spin* if you please instead of trolling; and where you have a wide water, not more than six or eight feet deep, and a great extent, so that the fish do not haunt particular little spots, but rove abroad, especially towards mid-day, spin by all means; it is the most killing style of fishing in the world. Here, again you use the dead-bait, but not

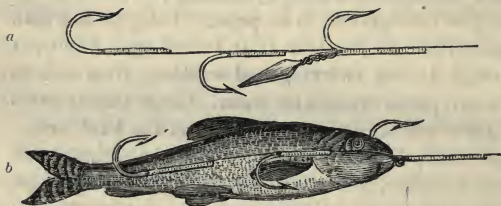
exactly as you do in trolling; and, if the weather be warm, and the season early, if any thing attracts jack, or a large trout, you seduce them in this way. Put on two swivels at least. Your bait you must be taught to fix that upon the hook by an adept. Newton could not give the figure of it on paper. Let your fish spin rapidly, and as evenly as if it turned upon a spit put through it, not swerving and wabbling from side to side as it passes through the water. Throw twenty yards of line or you do nothing. So!—from the bank here—right over, under the osiers, (or, as the cockneys call them “hosiers,”) on the other side! now draw diagonally—half against, half across, the stream, towards you! See how it spins!—If there is a jack—a trout—a chub within forty yards either side—if he has but as many eyes as a tailor’s needle, he cannot miss it.”

Snap-fishing for Pike.

Though pike is one of the most voracious fishes, it is found sometimes that it will play with the bait rather than swallow it, in which case, the *snap* is to be used. The snap tackle may consist of a single hook, larger and stouter than any within the register, which being fastened to strong gimp, is inserted at the mouth of a gudgeon, or other small fish, (the smaller, indeed, the more certain,) and brought out either at the middle of its side, or just before the vent.

But the treble-snap is by far the best; being made of three such hooks tied fast together, and secured to a piece of gimp; which being inserted by means of a baiting needle, at the vent, and carried out at th

mouth, which is afterwards sewed up and perforated by a lip-hook, the three hooks being spread into different directions, it is a thousand to one but that the pike is hooked.



a, dead snap with three hooks; *b*, the same baited.

Let the hook thus baited swim down the current, and when you perceive the float to be drawn under water, you may conclude the pike has laid hold of it; therefore give it a small jerk, and without allowing him time to play, keep your line always straight, drawing him towards the shore as soon as you can without breaking your tackle, and then with your landing-net throw him out of the water. It will always be the most prudent method to have gimp or brass wire next your hook, and your line to be rather shorter than the rod.

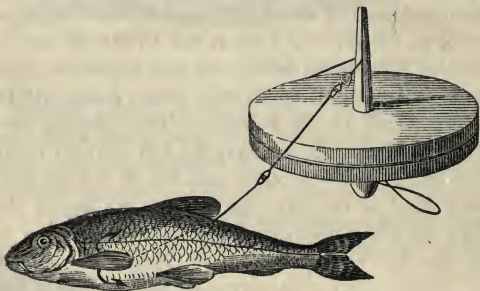
Whatever may be the length or thickness of your line, you will always find it useful to have a small swivel on it; if within a yard of the hook the better. Without this it will not be easy to manage the line properly.

Trimming for Pike.

There are several sorts of *trimmers*. One is made of flat cork, or any light wood painted, seven or eight inches diameter, turned round, with a groove in the edge, large enough to receive a fine whipcord or silk-line twelve or fourteen yards, or, at least five yards longer than the depth of the water : a small peg, two inches long, is fixed in the centre, with the end slit ; a small double hook fixed to a brass-wire link. Insert the baiting needle under the side-fin of the bait (for which gudgeons of an ounce weight or more are superior to all others), and keep it just within the skin of the side ; bring it out beyond the back-fin, drawing the wire after it, and the hook, when drawn home, will be partly covered by the side-fin. This method, performed carefully, will preserve the fish alive for many hours longer than any other ; one end of the line is of course fixed to the cork, the other to the loop in the wire ; the line is slightly put into the slit of the peg to keep the bait at a proper depth (from three to four feet), and to prevent its untwisting the line out of the groove. The trimmer should always be started on the windward side of the pond, and the rougher the water the better sport ; if not seized in one trip, it must be taken up and re-started from the windward side again.

Other trimmers are also of cork, and are to be baited and used as above ; their form is triangular, this being best adapted to go easily through weeds when taken by the pike ; after the line is run off they

will follow in the shape of a wedge, and will not long be kept from appearing on the surface in the weediest places: a hole is burnt through one corner of the cork, by which with a cord it may be made stationary to the side of any water; and which method is sometimes preferred where a boat cannot be readily commanded. No species of fishing does more execution than this: in windy weather, at all seasons of the year, and both day and night, the trimmer presents itself as the pike's most deadly foe.



Trimmer baited.

Live Bait Fishing for Pike.

"You cannot be supposed," says Titus in Blackwood, "to be in the middle of all the brightest and fairest of the creation, and yet be contented to go spooning on, dipping in and out, groping the bottom of the river without an eye for a whole day together,

without attending for a moment to any of them : why, you should use the 'Live Bait,' make a good gudgeon *fish for you*, while you look on and take the credit of his exertions : that's the way ! Now, this is to me your real style of fishing, when fishing is worth having ; that is when the water is just half bright, just grey, just the colour of a quaker girl's frock, and on a quiet, half frosty morning."



Live bait fixed on a hook.

The bait may be for clear water, either a dace or a tolerable sized gudgeon ; but when the water is rather coloured, a roach with its silvery gloss is most attractive. When a single hook is used, and one is enough, either pass the point and barb of the hook through the lips of the bait, toward the side of the mouth, or through beneath the base of the fore portion of the back-fin. When a double hook is used take a baiting needle, hook its curved end into the loop of the gimp, and pass its point beneath the skin of the bait from behind the gills upwards in a sloping direction, bringing it out behind the extremity of the back-fin ; then draw the gimp till the bends of the hooks are brought to the place where the needle entered, and attach the loop to the trolling line.

ANGLING FOR PERCH.

The perch¹ is a gregarious fish which is found in slow-running weedy rivers, in canals, and not rarely in ponds. It frequents hollow banks and deep holes, between weeds or stumps of trees, and spawns in May or earlier.

These fish have been found to bite best in the latter part of the spring; but they may be taken all the year round. The best times for angling for them are, in hot and bright weather, from sun-rise till six o'clock in the morning; and in the evening, from six till sunset. If the day be cool and cloudy, with a ruffling south wind, they will bite all day.

Your bait worms should be either well scoured brandlings, red dunghill worms, or those found in rotten tan. Your hook, No. 4, 5, or 6, being well whipped to a strong silk-worm gut, with a shot or two on it, put the point of the hook in at the head of the worm, and out again a little lower than the middle, and draw it above the shank of the hook upon the gut; then take a smaller one, beginning the same way, and bring the head up to the middle of the shank only; then draw the first worm down to the head of the latter, so that the tails may hang one above the other, keeping the point of the hook well covered. This is the most enticing method that can be adopted in worm-fishing. Use a small cork float, to keep the bait about a foot from the bottom, or sometimes above mid-water.

(1) In Latin, *Perca fluviatilis*.

If you are out in a bad day, and the perch will not bite, slip your float up the line near to the point of your rod, or take it off, and begin to rove for them thus: let down the line longer than the rod, or as long as you can properly throw it out, without injuring your bait, (which should be worms,) and throw it sometimes right across the water, sometimes up, and at others down, and in all directions, drawing the bait towards you, and playing it with the same motion as you would spin a minnow; so keep moving about, angling in such places as you think proper. When a fish takes the bait, slacken the line, and give him time before you strike.

POND ANGLING.

SEVERAL of the fish which I have already mentioned are kept or found in ponds, particularly perch. Trout will not thrive in ponds unless there is a stream of water running through them; and pike and eels are in general too voracious to permit other fish to live. I shall here mention three pond fish, carp, tench, and bream.

ANGLING FOR CARP.

The carp¹ thrives best in ponds with a rich marly or clayey bottom, and an overhanging shade of trees. The best months for carp fishing are from the 10th of April till July, using for baits red earth-worms, caddis-worms, grasshoppers, or, what is excellent, boiled green peas.

(1) In Latin, *Cyprinus Carpio*.

The best method is to throw a few slices of bread, to be carried with the wind, and in a short time it is probable you will see many fish feeding on them; if not, crumble a little very small, and cast it in where the slices rest; which will be the means to make them find the pieces at top. When you have suffered them to feed on these some little time, take a very long rod, strong line, middle-sized hook, and one shot fixed just above the hook, and baited with about the size of a large horse-bean, of the upper crust of a rasped French roll, and you may pick out what size and quantity you please, by dropping your bait before the largest fish, as he is feeding on the slices at top. This is a sure means of getting sport. This fish is very cautious, and therefore your float must be small, and you must be sure to keep out of sight; and because, when hooked, he struggles in a violent manner, you must take care that your tackle be very good and strong, otherwise he will break from you.

ANGLING FOR TENCH.

The tench¹ is considered to be a wholesome and nutritive fish. When found in rivers, he prefers weedy pools, and such as are overhung by trees; the spawning time is from June till September. It is best in season from the end of September till the end of May. The tench is a leather-mouthed fish, and will bite at a well scoured red worm, a maggot, a young wasp-grub boiled in milk, or a green worm from the

(1) In Latin, *Tinca vulgaris*.

boughs of trees. His best season for biting is from the beginning of April till the end of May. The hook, from No. 3 to No. 6, should be whipped on silk-worm gut, with two or three shots on the line, for pond-fishing, with a goose-quill float. His hours of feeding are eight, twelve, and four. Be sure to throw in a few maggots, at the taking of each fish, which will keep them together.

ANGLING FOR BREAM.

The bream¹ is a very coarse fish, and little esteemed, being very bony, and the flesh soft and clammy; but it sometimes affords good sport. They begin to spawn about the latter end of June, and are most in season when big with roe. You should have a strong line, with gut at bottom, the hook for a worm, No. 5, but for other baits smaller, and a swan-quill float. When you have fixed upon a place to angle in, plumb the bottom, and let your bait run about an inch from it. The best baits are red paste, gentles, wasp-maggots, small red worms, and grasshoppers. The bream is a strong fish, and runs hard when first hooked; but after two or three turns he will fall on his side, which enables you to bring him to land with ease. The best times of biting are from sun-rise till eight o'clock in the morning, and from four in the afternoon till sunset.

(1) In Latin, *Abramis brama*.

LAKE ANGLING.

A NUMBER of the fish already described are found in lakes ; all fish indeed which haunt rivers are found in the lakes from which rivers run, with the exception of migratory fish, when a high fall in a river stops them from getting higher ; hence there are no eels in the lake of Geneva ; but though they are stopped by the underground fall of the Rhone, they do get up the falls of the Rhine into the lake of Constance. The lake fish which I shall here notice, are the lake trout, the char, the gwiniad, and the rud.

ANGLING FOR LAKE TROUT.

Sir William Jardine has ascertained that the great lake trout¹, found in Loch Awe, Loch Laggan, Loch Ard, Ullswater, Loch Neagh, and probably in the Swiss Lakes, is a different species from the common trout. The following account, from the *Encyclopædia Britannica*, was drawn up from the MS. of Sir William Jardine.

“It is said to be by far the most powerful of our fresh-water fishes, exceeding the salmon in actual strength, though not in activity. The most general size caught by trolling ranges is from three to fifteen pounds ; beyond that weight they are of uncommon occurrence. If hooked upon tackle of moderate strength, they afford excellent sport ; but the general method of

(1) In Latin, *Salmo ferax* (JARDINE).

fishing for them is almost as well adapted for catching sharks as trout; the angler being apparently more anxious to have it in his power to state that he had caught a fish of such a size, than to enjoy the pleasure of the sport itself. However, to the credit of both parties, it may be stated, that the very strongest tackle is sometimes snapped in two by its first tremendous springs. The ordinary method of fishing for this kind of trout, is with a powerful rod, from a boat rowing at the rate of from three to four miles an hour, the lure a common trout from three to ten inches in length, baited upon six or eight salmon hooks, tied back to back upon strong gimp, assisted by two swivels, and the wheel-line strong whip-cord. Yet all this, in the first impetuous efforts of the fish to regain its liberty, is frequently carried away for ever into the crystal depths of Loch Awe.

“When in their highest health and condition, and indeed the whole of the time in which they are not employed in the operation of spawning, these fish will scarcely ever rise at a fly. At these periods they appear to be almost entirely piscivorous; so that, with the exception of night lines, baited also with trout, trolling is the only advisable mode of angling for them. The young, however, rise very freely at ordinary lake-trout flies, and are generally caught in this way, from one to one and a half pound weight. They occur abundantly near the outlet of the lake.

“About the middle of August, and during the three following months, the parent fish retire, for the purpose of spawning, to the deep banks of the lake in the

neighbourhood of the gorge, and into the gorge of the lake itself, where it empties its immense waters, forming the river Awe. They are said to remain engaged in this operation for two or three months, and at this time their instinctive tendencies are so far changed that they will rise eagerly at large and gaudily dressed salmon-flies, and may be either angled for from the banks, or trolled with a cross line, where the outlet of the lake is narrow.

“The flavour of this great lacustrine species is coarse and indifferent. The colour of the flesh is orange-yellow, not the rich salmon-colour of a fine common trout in good season. The stomach is very capacious, and on dissection (differing singularly in this respect from the salmon) it is almost always found gorged with fish.”

ANGLING FOR GWINIAD.

The gwiniad¹ is a gregarious fish, and is peculiar to a few lakes, such as the Bala lake and Pembrokeshire in Wales, Ullswater in Cumberland, Loch Neagh in Ireland, and Loch Lomond, Loch Eik, and the Castle Loch of Loch Maben in Scotland. It is about a foot long, and spawns about a month later than the trout. It is angled for exactly as the smaller sorts of trout, either with flies natural or artificial, or with ground bait, or by trolling.

ANGLING FOR CHAR.

There are two sorts of char, the gilt or red char,

(1) In Latin, *Coregonus lavaretus*.

otherwise named the turgoch¹, and the case char², both of which are highly esteemed for the table, I should think deservedly so, from those I have tasted in Cumberland fresh from the lakes. The turgoch has a scarlet red belly; the case char has the belly buff orange with pale red spots. The turgoch spawns in January; the case char as early as Michaelmas.

The same flies may be used in angling for char as those adapted for gwiniad or small lake trout; and ground bait or trolling may also be tried, but with uncertain success, as these fish do not bite freely.

ANGLING FOR RUD.

The rud³, broad roach, or tinscale, is found, according to Willoughby, in the lakes of Yorkshire, Lincolnshire, and Oxfordshire. It is always in season, and much esteemed, though it is not so good in April, which is the spawning season. The rud will rise at the fly or may be angled for near the bottom with the red worm; and, as it bites freely and struggles hard, it affords good sport.

SEA ANGLING.

THE angler who has only an opportunity of exercising his art in salt water, may make sure of sport if he can only discover the haunts of fish, as the sea fish

(1) In Latin, *Salmo salvelinus*.

(2) In Latin, *Salmo alpinus*.

(3) In Latin, *Barbus orfus*.

are by no means so timid and shy as those in fresh water.

Near to the mouths of rivers when the tide is flowing up, several sorts of fish may be taken, such as whiting¹, base or bass², coal-fish³, the fry of cod⁴, and haddock⁵, flat fish, eels, and other sorts.

From piers, or a little way out at sea, may be taken larger whiting, small cod-fish, haddock, small turbot⁶, large plaice⁷, and others, having a long strong rod and line, the line well leaded, a large hook, and a large cork float. Bait for the former with scoured red worms, shrimps, and gentles; for the latter with one or two large well-scoured worms, a raw muscle, the inside of a small raw crab, whipped round the hook with a little white wool, a bit of a whiting or other fish, fishing near or on the bottom, where the water is not too deep; at other times a little more than mid-water, according to the kind of bait that you use.

Mackarel⁸ may be taken from rocks, or other places near the sea, when the tide is in, in parts where they frequent, by baiting with a bit of new scarlet broad-cloth, or a small piece of one of their own species, swimming about mid-water, or lower if you can for

(1) In Latin, *Merlangus vulgaris*.

(2) In Latin, *Perca labrax*.

(3) In Latin, *Merlangus carbonarius*.

(4) In Latin, *Morrhua vulgaris*.

(5) In Latin, *Morrhua æglefinus*.

(6) In Latin, *Pleuronectus maximus*.

(7) In Latin, *Platessa vulgaris*.

(8) In Latin, *Scomber vulgaris*.

the depth, with a good large cork float. The rocks of Dunleary in Ireland, which are eight or ten miles in length, and the nearest part about five miles eastward of Dublin, are remarkable for this way of fishing.

When you fish for haddocks, your line must be deep in the water, and your hook baited with two or three lob-worms, or muscles taken from the shell. Your tackle must be strong, for they struggle, especially if they have arrived to a tolerable growth.

In sea-fishing, when a ship is under sail, your line ought to be sixty fathoms in length, having a large hook affixed to it, and a piece of lead sufficient to keep it as deep under water as possible. Your line must be made of hemp, and fastened to the gunwale of the ship. Cod and large haddocks are the fish usually taken in this way, and sometimes ling; the bait for them is a piece of raw beef, and it is scarcely possible to feel either of them bite, even though you hold the line in your hand, by reason of the continual motion of the ship.

Angling for whittings from a boat affords good sport, and if you have not an experienced fisherman to show you the fishing-banks, you may know where to cast anchor from the gulls and other sea-birds crowding to the place. At Portsmouth the tradesmen use smelts as baits for this sort of fishing, but muscles or worms are equally good. A paternoster line, without any rod, with half a dozen hooks, at half a yard distance from each other, may be fastened to the inside of the boat, and by holding this in the hand, it will be easy to feel when the fish bite. I have seen them bite so freely at

Largs, in the Firth of Clyde, as to take two or three at a haul as fast as I could pull them up.

The whiting pollack¹ is often caught in rock-fishing, and from his struggling hard he affords good sport. The best baits are smelts, shrimps, muscles, cockles, or worms. The line from the boat may be sixty yards long, with three or four hooks at some distance apart, and about half a pound of lead above the highest. The line ought to be coiled up in the hand, and then the lead thrown to a distance into the sea, as is done in night-line-fishing for trouts in rivers.

(1) In Latin, *Merlangus pollachius*.

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